PS[CS— Br. Sch.]
63 Periodicals [British School]

UNIVERSITY OF LONDON
LIBRARY
SHL
WITHDRAWN

Digitized by the Internet Archive
in 2026

https://archive.org/details/annual-of-the-british-school-at-athens_1958-1959_53-54

THE ANNUAL
OF THE
BRITISH SCHOOL AT ATHENS

Nos. 53–54

1958–1959

THE BRITISH SCHOOL AT ATHENS
31–34 GORDON SQUARE, LONDON, W.C. 1
Published by the Managing Committee
PRICE: FIVE GUINEAS NET

BIBL.
LONDIN.
UNIV.

SHL
WITHDRAWN

PRINTED IN GREAT BRITAIN

THE BRITISH SCHOOL OF ARCHAEOLOGY AT ATHENS

Patron: H.R.H. The Prince Philip, Duke of Edinburgh, K.G., K.T., G.B.E.

MANAGING COMMITTEE 1957–8

Professor R. J. H. Jenkins, M.A., F.S.A., *Trustee and Chairman.*

Professor Bernard Ashmole, C.B.E., M.C., M.A., B.LITT., F.B.A., *Trustee*
Appointed by the University of Oxford.

Professor D. L. Page, M.A., F.B.A., F.S.A., *Trustee*
Appointed by the University of Cambridge.

H.B.M. Ambassador at Athens, *Vice-President.*

Sir John Forsdyke, K.C.B., M.A., *Vice-President.*

Professor A. J. Toynbee, C.H., M.A., D.LITT., F.B.A., F.S.A., *Vice-President.*

Professor C. M. Robertson, M.A.
Appointed by the University of London.

Professor D. Talbot Rice, M.B.E., M.A., B.SC., D.LITT., F.S.A.
Appointed by the University of Edinburgh.

P. M. Fraser, Esq., M.A.
Appointed by All Souls College, Oxford.

M. S. Briggs, Esq., F.R.I.B.A.
Appointed by the Royal Institute of British Architects.

Miss Winifred Lamb, M.A., SC.D., F.S.A.
Appointed by the Hellenic Society and the British Institute of Archaeology at Ankara.

Professor Antony Andrewes, M.B.E., M.A., F.B.A.

R. D. Barnett, Esq., M.A., D.LITT., F.S.A.

Miss Joan Evans, M.A., D.LITT., DIR.S.A.

Professor A. W. Gomme, M.A., F.B.A.

M. R. E. Gough, Esq., M.A., F.S.A.

N. G. L. Hammond, Esq., D.S.O., M.A.

Professor R. J. Hopper, B.A., PH.D., F.S.A.

Miss L. H. Jeffery, M.A., D.PHIL., F.S.A.
Joint Editor of the *Annual.*

A. M. Woodward, Esq., M.A., F.S.A.

Secretary: Miss Edith Clay, F.S.A., 31–34 Gordon Square, London, W.C. 1.
Treasurer: H. E. Kneen, Esq., West Winds, The Parks, Minehead, Somerset.

Director
M. S. F. Hood, Esq., M.A., F.S.A.

THE BRITISH SCHOOL OF ARCHAEOLOGY AT ATHENS

Patron: H.R.H. The Prince Philip, Duke of Edinburgh, K.G., K.T., G.B.E.

MANAGING COMMITTEE 1958–9

Professor C. M. Robertson, M.A., *Chairman*
Appointed by the University of London.

Professor Bernard Ashmole, C.B.E., M.C., M.A., B.LITT., F.B.A., *Trustee*
Appointed by the University of Oxford.

Professor R. J. H. Jenkins, M.A., F.S.A., *Trustee*

Professor D. L. Page, M.A., F.B.A., F.S.A., *Trustee*
Appointed by the University of Cambridge.

H.B.M. Ambassador at Athens, *Vice-President.*

Sir John Forsdyke, K.C.B., M.A., *Vice-President.*

Professor A. J. Toynbee, C.H., M.A., D.LITT., F.B.A., F.S.A., *Vice-President.*

Professor D. Talbot Rice, M.B.E., M.A., B.SC., D.LITT., F.S.A.
Appointed by the University of Edinburgh.

P. M. Fraser, Esq., M.A.
Appointed by All Souls College, Oxford.

M. S. Briggs, Esq., F.R.I.B.A.
Appointed by the Royal Institute of British Architects.

Miss Winifred Lamb, M.A., SC.D., F.S.A.
Appointed by the Hellenic Society and the British Institute of Archaeology at Ankara.

Professor Antony Andrewes, M.B.E., M.A., F.B.A.

V. R. d'A. Desborough, Esq., M.A., F.S.A.

Miss Joan Evans, M.A., D.LITT., DIR.S.A.

M. R. E. Gough, Esq., M.A., F.S.A.

N. G. L. Hammond, Esq., D.S.O., M.A.

D. E. L. Haynes, Esq., M.A.

Professor R. J. Hopper, B.A., PH.D., F.S.A.

Miss L. H. Jeffery, M.A., D.PHIL., F.S.A.
Joint Editor of the *Annual.*

Secretary: Miss Edith Clay, F.S.A., 31–34 Gordon Square, London, W.C. 1.
Treasurer: H. E. Kneen, Esq., West Winds, The Parks, Minehead, Somerset.

Director
M. S. F. Hood, Esq., M.A., F.S.A.

TABLE OF CONTENTS

1. J. M. COOK. Old Smyrna, 1948–1951 (*Plates* 1–6)
    - I. The site and its environs 1
    - II. The history of Old Smyrna 9

2. R. V. NICHOLLS. Old Smyrna: the Iron Age fortifications and associated remains on the city perimeter (*Plates* 7–20) 35

3. J. K. ANDERSON. Old Smyrna: the Corinthian pottery (*Plates* 21–30) . 138

4. JOHN BOARDMAN. Old Smyrna: the Attic pottery (*Plates* 31–44) . . 152

5. SINCLAIR HOOD AND PIET DE JONG. A Late Minoan III 'kitchen' at Makritikhos (Knossos) (Knossos Survey **90**) (*Plates* 45–48) . . . 182

6. SINCLAIR HOOD, GEORGE HUXLEY, AND NANCY SANDARS. A Minoan cemetery on Upper Gypsades (Knossos Survey **156**) (*Plates* 49–63) . . 194
    - The cemetery. By SINCLAIR HOOD 194
    - The Late Minoan pottery. By GEORGE HUXLEY . . . 226
    - Clay larnakes. By SINCLAIR HOOD and GEORGE HUXLEY . . 227
    - The bronzes. By NANCY SANDARS 232
    - The amber beads. By NANCY SANDARS 237
    - Inventory of the vases and other objects from the cemetery. By SINCLAIR HOOD, GEORGE HUXLEY, and NANCY SANDARS . . . 244
    - Appendix: Report on amber beads from Aegean sites. By A. E. WERNER 261

7. JOHN LEATHAM AND SINCLAIR HOOD. Sub-marine exploration in Crete, 1955 (*Plates* 63–65) 263

8. SINCLAIR HOOD. A Minoan shaft-grave on the slopes opposite the Temple Tomb (Knossos Survey **152**) (*Plate* 66) 281

9. SINCLAIR HOOD. A Minoan shaft-grave in the bank with Hogarth's Tombs (Knossos Survey **16**) (*Plate* 66) 283

10. J. M. C. TOYNBEE. Four Roman portraits in the Piraeus Museum (*Plates* 67–70) 285

11. R. HOPE SIMPSON. Nemesis: A Mycenean settlement near the Menidi Tholos Tomb (*Plate* 71) 292

12. JOHN BOARDMAN. Excavations at Pindakas in Chios (*Plates* 72–73) . . 295

INDEXES 311

13. R. V. NICHOLLS. Site-plan of Old Smyrna (*Plate* 74, *at end of vol.*)

FIGURES IN THE TEXT

OLD SMYRNA, 1948–1951

Fig. 1. Old Smyrna, section through site 2
Fig. 2. The environs of Smyrna 6
Fig. 3. Old Smyrna from the north-east in the late seventh century B.C. (an imaginative reconstruction) 15
Fig. 4. Late seventh-century Chian wine-jar 16

OLD SMYRNA: THE IRON AGE FORTIFICATIONS (&c.)

Fig. 1. A key to the signs used 38
Fig. 2. The south-east corner of the circuit, H–Kxxi–xxiii . . . 42
Fig. 3. Children's cemetery, Area 'A' 44
Fig. 4. The strata sealing the burial in children's cemetery pot **13** . . 45
Fig. 5. Children's cemetery, Area 'C' 49
Fig. 6. White stone threshold 50
Fig. 7. A simplified interpretation of the sequence of the fortifications in the λ–λ' section 51
Fig. 8. Section μ–μ' 54
Fig. 9. Remains of a seventh-century house, perhaps of megaron type . . 55
Fig. 10. The fountain-house and remains to the west 57
Fig. 11. Section of the masonry of the Wall 3 outer face on the north-west edge of the plunder trench 58
Fig. 12. Fountain-house: simplified floor-plan 59
Fig. 13. Fountain-house: front and longitudinal elevations . . . 60
Fig. 14. The fountain-house: the draw basin 62
Fig. 15. The fountain-house restored 63
Fig. 16. Elevation, section, and plan of the apparent joint between two stretches of the Wall 3 outer face in Exix 67
Fig. 17. Fragmentary white stone block found outside the face shown in Fig. 16 67
Fig. 18. The north-east gate area 69
Fig. 19. Plan and elevations of the north-east corner of the Wall 1 tower . 70
Fig. 20. Section through the steps by the north-east gate . . . 75
Fig. 21. Fortifications, &c., to the north of the temple 76
Fig. 22. Section ι–ι' 78
Fig. 23. Section θ–θ' 80
Fig. 24. Fortifications, &c., in EFxi–xiii (north of main trench) . . 83
Fig. 25. Section of the deep-level probe in Exii–xiii, east of the stepped cellar . 85
Fig. 26. Section β–β'. The modern shape of Alyattes' siege-mound approximately on its north–south axis in terms of the conjectured position of Wall 3 88
Fig. 27. Sections ϵ–ϵ', ζ–ζ' 90
Fig. 28. Plan and section of supplementary probe made in 1952 in Kvii . 92
Fig. 29. Wall in Nx–xii 94

Fig. 30. Soil pack (Wall 1 tower at the north-east gate) . . . 95
Fig. 31. Stone pack 96
Fig. 32. Wall 1 tower ashlar (schematic) 97
Fig. 33. Brick pack 100
Fig. 34. A possible interpretation of the superstructure involving timber revetting and a suggestion for the protection of the *chemin de ronde* and battlements against the weather 112
Fig. 35. An alternative possibility for the covering of the *chemin de ronde* and battlements 113
Fig. 36. The defences of the gate to the classical fort known as the 'Acropolis' . 135

OLD SMYRNA: THE CORINTHIAN POTTERY

Fig. 1. Fragments of Corinthian oinochoe No. **33** (1:2) 140
Fig. 2. No. **113** 146
Fig. 3. No. **140** 149
Fig. 4. No. **158** 150

OLD SMYRNA: THE ATTIC POTTERY

Fig. 1. Lebes gamikos no. **1**. The lower zones on the body (1:6) . . 153
Fig. 2. Lebes gamikos no. **1**. The foot (1:6) 154
Fig. 3*a*. Lebes gamikos no. **1**. The front shoulder scene (2:3) . . . 157
Fig. 3*b*. Lebes gamikos no. **1**. The under-handle figures (2:3) . . . 158
Fig. 4. Lebes gamikos no. **1**. The rear shoulder scene (1:3) . . . 159
Fig. 5. Lebes gamikos no. **1**. Detail of animals from the foot (1:3) . . 160
Fig. 6. Lebes gamikos no. **1**. Animals from the body (1:3) . . . 160
Fig. 7. Section of cup no. **26** (1:2) 164
Fig. 8. Black-figure cup fragments, no. **79** 169
Fig. 9. Red-figure crater fragments 173
Fig. 10. Red-figure and patterned vases and fragments 174
Fig. 11. Sections of black and patterned vases (1:2) 177
Fig. 12. Sections of black cups and a bolsal (1:2) 178
Fig. 13. Sections of black vases (1:2) 180

A LATE MINOAN III 'KITCHEN' AT MAKRITIKHOS (KNOSSOS) (Knossos Survey **90**)

Fig. 1. North-east edge of Makritikhos village, showing position of site . . 183
Fig. 2. Plan and section 184
Fig. 3. Feet of low-stemmed goblets. Nos. 1–2 Middle Minoan 'egg-cup' feet for comparison (1:2) 187
Fig. 4. Fragment of larnax **20** 187
Fig. 5. Vases (1:3 unless otherwise stated) 189
Fig. 6. Vases (1:3 unless otherwise stated) 190
Fig. 7. Pithos (1:8) and drain channel (1:4) 191
Fig. 8. Sherds from fill of kitchen (1:3) 191
Fig. 9. **37** (1:2), **38** (1:2), **39** (1:1) 192

A MINOAN CEMETERY ON UPPER GYPSADES (Knossos Survey **156**)

Fig. 1. Plan of the cemetery 195
Fig. 2. Tomb I 199
Fig. 3. Tomb II 201
Fig. 4. Tomb III 202
Fig. 5. Tomb IV 203
Fig. 6. Tomb V 204
Fig. 7. Tomb VI 206
Fig. 8. Tomb VII 207
Fig. 9. Tomb VIII 209
Fig. 10. Tomb IX 210
Fig. 11. Tomb X 211
Fig. 12*a*. Tomb X: beads by skeleton II 212
Fig. 12*b*. Tomb X: beads X. **13** 212
Fig. 13. Tomb XI 213
Fig. 14. Tomb XII, section 214
Fig. 15. Tomb XII, plan 214
Fig. 16. Tomb XIII 216
Fig. 17. Tomb XIV 217
Fig. 18. Tomb XV 218
Fig. 19. Tomb XVI 219
Fig. 20. Tomb XVII 220
Fig. 21. Tomb XVIII 221
Fig. 22. Tomb XVIII: chamber 222
Fig. 23. Tomb XIX 224
Fig. 24. Clay larnakes 228
Fig. 24*a*. Clay larnakes (1:20) 229
Fig. 24*aa*. Larnax II from Tomb XII 230
Fig. 24*b*. Larnax IV from Tomb VI 230
Fig. 24*c*. Larnax from Tomb VII 231
Fig. 25. Larnax from Tomb XIII 232
Fig. 26. Vases. Tombs I, II (1:3) 240
Fig. 27. Vases. Tomb VII (1:3 unless otherwise stated) . . . 241
Fig. 28. Vases. Tombs VI, VII, IX (1:3 unless otherwise stated) . . 242
Fig. 29. Vases. Tombs VII, X, XI, XIIA, XIV (1:3) 243
Fig. 30. Vases. Tomb XV (1:3) 244
Fig. 31. Tomb XVIII (1:2) 254
Fig. 32. Bronze and iron knives, &c. (1:2) 255
Fig. 33. Bronze razors and rings (VII. **19**, 2:1, others 1:2 or 1:1) . . 256
Fig. 34. Pins (1:2), beads (2:1), ivory comb IV. **1** (1:1) . . . 257
Fig. 35. Beads (2:1 unless otherwise stated) 258
Fig. 36. Vases, &c., Tomb XVIII (1:2 unless otherwise stated) . . 259
Fig. 37. Middle Minoan terracotta figurines (1:1) 260

SUB-MARINE EXPLORATION IN CRETE, 1955

Fig. 1. Crete, showing area in which work was done 263
Fig. 2. Sketch plan of Chersonisos harbour . . . . *opposite* 266
Fig. 3. Area of squared blocks at 1 on plan, Fig. 2 268
Fig. 4. Fish tanks cut in the rock at 14 on plan, Fig. 2 . . . 271
Fig. 4*a*. Sections through fish tanks 272
Fig. 5. Fish tanks cut in the rock at Mochlos 274
Fig. 6. Pseira harbour 276
Fig. 7. Roman mole in Pseira harbour 277
Fig. 8. Bay of Ayia Galini 278
Fig. 9. Amphora necks from Chersonisos (scale 1:4) 279
Fig. 10. Vases from Mochlos (5), Pseira (6–11), and Ayia Galini (12) (scale 1:4) . 279

A MINOAN SHAFT-GRAVE ON THE SLOPES OPPOSITE THE TEMPLE TOMB (Knossos Survey **152**)

Fig. 1. Plan and section 282
Fig. 2. Stand for ? double-axe 282

A MINOAN SHAFT-GRAVE IN THE BANK WITH HOGARTH'S TOMBS (Knossos Survey **16**)

Fig. 1. Plan and section, with inscribed slab (top, A) 284

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

Fig. 1. B.M. 1963 287
Fig. 2. Athens, NM75 290

NEMESIS: A MYCENAEAN SETTLEMENT NEAR THE MENIDI THOLOS TOMB

Fig. 1. Map of Nemesis 293

EXCAVATIONS AT PINDAKAS IN CHIOS

Fig. 1. Plan of the area Pyrgi–Kalamoti–Emporio 296
Fig. 2. Plan of Pindakas hill and area 297
Fig. 3. Pindakas. Plan of the excavations 298
Fig. 4. Pindakas. Sections AA, BB 299
Fig. 5. Pindakas. Sketch of the main building periods 302
Fig. 6. Pindakas. Minor objects 304

LIST OF PLATES

Old Smyrna, 1948–1951

1. Old Smyrna, area plan.
2. (*a*) View over site from north-east. (*b*) View to north from the Pagos. (*c*) View of site from north.
3. (*a*) Part of hoard of silver coins. (*b*) Marble spout from Bornova. (*c*) Stepped incline by temple platform.
4. (*a–c*) Sixth-century pottery.
5. (*a*) Archaic wall at Bel Kahve. (*b*) Protogeometric vases from earliest Greek strata. (*c–d*) Eighth-century Ionic vase-fragments.
6. (*a*) The mound from the west. (*b*) Fragments of mid-sixth-century dinos. (*c*) Seventh-century terracotta bath. (*d*) Triangular and leaf-shaped arrowheads. (*e*) Fragments of archaic bowls with decorations of amphorae.

Old Smyrna: the Iron Age fortifications and associated remains on the City perimeter

7. The fortifications, Section λ–λ′.
8. The fortifications, Section κ–κ′.
9. The fortifications: habitation levels against the fortifications, Section η–η′.
10. Fortifications, Section λ–λ′. (*a*) Rebuilt Wall 1 outer face. (*b–c*) Wall 2 inner face foundation.
11. Fortifications, Section λ–λ′, 'Children's Cemetery'. (*a*) Some of the burials in Area 'A' opened. (*b–e*) Burial positions: (*b*) Burial *c*, (*c*) Burial *f*, (*d*) Burial *g*, (*e*) Burial *j*.
12. Fortifications, Section λ–λ′. (*a–b*) Late seventh-century wall and revetment. (*c–d*) Wall 3 outer face foundation.
13. Fortifications. (*a*) Cement-lined basin against inner face of wall. (*b*) Apparently re-used lintel-block. (*c–d*) Column base in seventh-century house by Section μ–μ′.
14. Fountain-house. (*a*) Vault from east. (*b*) Passage and overflow channel, draw-basin to rear.
15. Fountain-house. (*a*) Passage, overflow channel and threshold block. (*b*) Inlet to draw-basin. (*c*) Fallen face-blocks outside the fountain-house.
16. Fortifications. (*a*) Apparent junction in wall-face. (*b–c*) The north-east gate: (*b*) East face of Wall 1 tower from south. (*c*) An early stage in the cutting of Section κ–κ′ from the north, showing the faces of the Wall 1, 3, and 4 towers.
17. Fortifications, north-east gate. (*a–c*) Wall 1 tower. (*d*) Brick behind Wall 3 tower face in Section κ–κ′. (*e*) Steps outside Wall 4.
18. Fortifications. (*a*) Wall 3/4 face in Section θ–θ′. (*b–c*) Classical terrace to north of temple. (*d*) Wall 1 tower at north-east gate.
19. Fortifications, Section η–η′. (*a*) Worked stones from Wall 1 fill. (*b*) Wall 2/3 inner face and anterior and subsequent house-walls at north-west corner of main occupation probe. (*c*) Central stretch of Wall 2/3 inner face to north of main occupation probe. (*d*) Classical glacis.
20. Fortifications. (*a–b*) Wood impressions in mound-fill. (*c*) Lesbian wall to west of city.

Old Smyrna: the Corinthian Pottery

21–26. The Corinthian pottery.

27. The Corinthian pottery: No. **130** (3:2).

28–30. The Corinthian pottery.

Old Smyrna: The Attic Pottery

31–44. The Attic pottery.

A Late Minoan III 'Kitchen' at Makritikhos (Knossos) (Knossos Survey **90**)

45. (*a*) South end of Kitchen with door in back wall (to r. of ranging-pole) and fallen column base. (*b*) North end of Kitchen with vases before removal. (*c*) Vases (l. to r.) (*top row*) **14**, **17**, 5, **9**, **10**: (*bottom row*) **11**, **1**, **13**. (*d*) Amphora **5**. (*e*) Kylix **1**. (*f*) Amphorae **3**, **4**.
46. (*a*) Tripod cauldron **12**. (*b*) Sherd from larnax **20**. (*c*) Sherd from pithos or larnax **21**. (*d*) Jug **17**. (*e*) Bowl **11**.
47. (*a*) Chafing dish **13**. (*b*) Jug **8**. (*c*) Handles **36**, **35**. (*d*) Arm of stone statuette **37**. (*e*) Bowl **10**, dipper **14**. (*f*) Drain channel **19**.
48. (*a*) Sherds from fill of Kitchen, &c. (*b*) Spouted jar **7**, lid **15**.

A Minoan Cemetery on Upper Gypsades (Knossos Survey **156**)

49. (*a*) View from the east (the cemetery is in the white field below the skyline in the centre). (*b*) Tomb I: Chamber with traces of wooden coffin; bronzes 5, 6 to l., vases 1–3 to r. (*c*) Tomb II: Covering slabs over grave. (*d*) Tomb II: remains of burial. (*e*) Tomb II: skull with beads **4–10** to r. (*f*) Tomb III: pit in dromos. (*g*) Tomb III: Chamber.
50. (*a*) Tomb IV: entrance to chamber. (*b*) Tomb IV: larnax. (*c*) Tomb IV: pit below larnax. (*d*) Tomb V: dromos. (*e*) Tomb V: blocking wall. (*f*) Tomb VI: larnakes.
51. (*a*) Tomb VIII: chamber with dromos beyond. (*b*) Tomb VII: larnax with amphorae **1**, **2** to l. (*c*) Tomb VII: blocking wall from dromos. (*d*) Tomb XI: larnakes. (*e*) Tomb XI: vases **1–3** below larnax II. (*f*) Tomb XI: pit below larnax I.
52. (*a*) Tomb XII, with remains of larnax in grave. (*b*) Tomb XV: traces of wooden coffin in foreground. (*c*) Tomb X: remains of wooden box with bead **14** (bottom l.). (*d*) Tomb VIII: blocking slab from dromos. (*e*) Tomb XVIII: blocking wall from antechamber. (*f*) Tomb XVIII: burials VII–IX in south part of chamber.
53. (*a*) Tomb XVIII: burials I, II in north part of chamber. (*b*) Tomb XVIII: north chamber with burials III (far r.), IV–VI (in foreground): (*c*) Tomb XVIII: cups from fill, **12**, **11**, **10**. (*d*) Tomb XVIII: vases with Burial III, **4**, **1**, **2**, **3**.
54. (*a*), (*d*) I. **2**, jug. (*b*) I. **4**, stirrup jar. (*c*) I. **1**, rhyton.
55. (*a*, *b*) I. **3**, cup. (*c*) VII. **4**, stirrup jar. (*d*) XV. **1**, **2**, jug and cup. (*e*) II. **2**, juglet.
56. (*a*) Tomb VII: (*top*) **11**, **10**, **4**, **9**: (*bottom*) **7**, **6**, **8**, **5**, **3**. (*b*) VII. **8**, stirrup jar. (*c*), (*e*) VII. **1**, amphora. (*d*) VIA. **1**, **3** stirrup jar and pilgrim flask. (*f*) VI. **1**, **2**. (*g*) X. **2**, **1**.
57. (*a*) VII. **2**, amphora. (*b*) VII. **6**, **9**, **3**, stirrup jars and jug. (*c*) XI. **2**, **1**, **3**, stirrup jars and drinking jar. (*d*) IX. **1**, **2**. (*e*) XIV. **2**, **1**. (*f*) sherds from large jar.
58. (*a*) L.M. sherds from trial trenches, &c. (*b*) M.M. clay objects, mostly from fill of Tomb XVIII: *l. to r.*: *Left row* (*vertically*) M. **5**, M. **6**, XVIII. **33**, unnumbered fragment. *Centre row* (*vertically*) XVIII. **31** and **32**, XVIII. **22**, M. **2**. *Right row* (*vertically*) XVIII. **30**, M. **1**, XVIII. **21**, XVIII. **20**. (*c*) XVIII. **22**, sherd from jug with 'barley ears' in relief. (*d*) V. **1**, razor; X. **3**, **4**, mirror and razor.
59. (*a*) Beads and amulets: *l. to r.*: *1st row* (*vertically*) X. **6**, II. **9**, II. **10**, VII. **23**, VII. **22**. *2nd row* (*vertically*) X. **10**, X. **9**, XI. **8**. *3rd row* (*vertically*) XIIIA. **2**, X. **14**, II. 2, II. **3**. *4th row* (*vertically*) X. **5**, X. **11**, VII. **24**, VII. **25**. *5th row* (*vertically*) X. **7**, IV. **5**, II. **6**, II. **8**. (*b*) Knives and razors (*vertically*) I. 5, I. **8**, I. **7**, I. **6**.
60. (*a*) Bronzes, mostly from Tombs VI and VII. *Top row, l. to r.*: VII. **13**, VII. **16**, VII. **14**, VII. **15**, VI. **5**. *Bottom centre.* VII. **12**. *Lower r.* (*upwards from scale*) XVIII. **23**,

M. **7**, VI. **6**. (*b*) Bronze and silver rings and beads. *Top row, l. to r.*: VII. **18**, IX. **3**, XVIII. **6**. *Centre, l. to r.*: IV. **4**, VI. **4**, (*above*), VI. **3** (*below*), XVIII. **6**. *Bottom row, l. to r.*: VII. **17**, III. **1**, XVIII. **8**, XVIII. **7**. (*c*) Beads X. **13**. (*d*) *Top l.*, Stone jug XVIII. **24**. *Bottom l.*, ivory comb IV. **1**. *Top r.*, crystal beads IV. **5**, X. **11**. *Bottom r.*, ostrich egg XVIII. **35**.

61. Larnakes: (*a*) Tomb VII. (*b–c*) Tomb XIII. (*d–f*) Tomb VI (larnax IV).

62. Sealstones and impressions: *top row* (*l. to r.*) III. **4**, II. **5**, VII. **21**; *bottom row* (*l. to r.*) VII. **20**, XVIII. **5**, M. **2**.

63. Sealstones and impressions: *upper row* (*l. to r.*) II. **4** (2½ : 1, 1 : 1), II. **5** (1½ : 1, 1 : 1). *Lower row* (*l. to r.*) VII. **21** (3 : 1, 1 : 1). VII. **20** (3 : 1, 1 : 1), XVIII. **5** (2 : 1, 1 : 1).

Sub-marine Exploration in Crete, 1955

63. (*a*) Stone grill from fish tanks at Mochlos. (*b*) Vase from Mochlos (5 on Fig. 10).

64. (*a*) Chersonisos: view north across harbour from 6 on plan, Fig. 2, to headland. (*b*) Chersonisos: champfered blocks at 12 on plan, Fig. 2. (*c*, *d*) Chersonisos: mole (A) looking south from headland. (*e*) Mochlos: fish tanks. (*f*) Mochlos: submerged isthmus looking north from mainland.

65. (*a*) Chersonisos: fish-tanks. (*b*) Vase from Pseira. (*c*) Vases from Pseira (*l. to r.*, 8, 6, 10 on Fig. 10). (*d*) Lead plate from Ayia Galini.

A Minoan Shaft-grave on the slopes opposite the Temple Tomb (Knossos Survey **152**)

A Minoan Shaft-grave in the bank with Hogarth's Tombs (Knossos Survey **16**)

66. (*a*) Bank with Hogarth's Tombs and shaft-grave, from Early Christian basilica on Sanatorium site. (*b*) Double-axe stand from shaft-grave opposite Temple Tomb. (*c*) Shaft-grave by Hogarth's Tombs with covering slabs in place. (*d*) Covering slab from (*c*) with branch sign. (*e*) Shaft-grave opposite Temple Tomb with stone fill (double-axe stand to l.). (*f*) Shaft-grave opposite Temple Tomb cleared.

Four Roman portraits in the Piraeus Museum

67. (*a–b*) Piraeus E 4. (*c–d*) B.M.

68. (*a–b*) Piraeus E 3.

69. (*a–c*) Piraeus E 717. (*d*) Ostia Museum.

70. (*a*) Capitoline Museum. (*b*, *d*) Piraeus S 7. (*c*) Capitoline Museum.

Nemesis: A Mycenaean Settlement near the Menidi Tholos Tomb

71. (*a*) Nemesis: the hill from the south-west. (*b*) Mycenaean pottery from Nemesis (scale in cm.).

Excavations at Pindakas in Chios

72. (*a*) The lower terrace from the west. (*b*) The upper terrace from the north. (*c*) Millstones, &c., *in situ* on the lower terrace.

73. Selection of the coin hoard (scale 2 : 1).

Old Smyrna

74. Site-plan (*in folder at end of volume*).

OLD SMYRNA, 1948–1951

(PLATES 1–6)

I. THE SITE AND ITS ENVIRONS

THE site of Old Smyrna lies on a low spur at the foot of the Yamanlar Dağı, or Mountain of Unco Things, at a distance of 450 metres east of the present coastline. The spur is 365 metres long on a north–south axis, with a maximum breadth of 250 metres. On the north-east and east its outline is marked by a bank, revetted in large part by a high terrace wall of small stones. The elevated north-west corner of the site is encircled by superimposed terraces leading up to a circular platform or belvedere, which dominates the site, at an altitude of 21·3 m. above sea-level (PLATES 2*c*, 6*a*, Squares G–Hix). On the west side the spur is bounded by a cart road leading inland to Bornova,[1] and at the south tip it merges into the low-lying pasturage by a sluggish stream. The terracing of the hillock, which in the north-west presents a picturesque aspect, is believed in the main to be the work of a landowner named Turlita in the nineteenth century. A zone along the north side of the site, corresponding in width to the main sector of our excavations there, is planted with olive trees, of which we were obliged to cut down a score; there is also a narrow fringe of olives along the eastern edge of the site. The greater part of the surface of the hillock is divided between two vineyards, the upper on the north and the lower on the south, separated by a bank which is bordered near its east end by a row of fig trees (Squares Nxvi to Gxix); there is also a smaller vineyard of triangular outline on the slope between the upper vineyard and the Bornova road.

Except for the more elevated platform or mound at the north-west corner, the north part of the hill lies at about 10–12 metres above sea-level, though falling away somewhat to eastward; it sinks steadily to the level of the alluvial plain (*c.* 2 metres above sea-level) at the south end. In the main the ground is built up of successive deposits of occupation resting on accumulated silt; this seems to be a sure inference from the fact that the uniform water table has been reached by three wells in the north and central parts of the site (Squares Hx and Fxii, and Lxvi), as well as in our trench in Square Jxviii and at various points on the edges of the site. Only on the north-west side of the hill has rock been encountered. This takes the form of a pinnacle rising to the surface in Square Nxiv and presenting a face, scarred by recent blasting, alongside the Bornova road. The rock, of the same andesite stone as the adjacent mountainside, now reaches a height of about 8 metres above sea-level at this point; it was shown by our excavation here to fall away sharply to the north-east. Rock was also reached in deep trenching by the proprietors of the land in 1949 on the slope to the north-west of this, and fallen rock was discovered at the same time in Square Nxii. Farther to the north-west, in Squares K–Lvi, the modern field-drainage channel, which now carries the water from the low ground on the north side of the site southwards towards the sea, has been excavated in the rock at about a metre above sea-level over a distance of about 30 metres north-eastwards from the bridge in Square Mvi. These observations seem to justify the assumption that the 'pinnacle' in Square Nxiv forms the tip of a salient of rock springing south-eastward from the foot of the adjacent mountain slope on which the modern village of Bayraklı stands. Apart from this latent rocky neck the hill is surrounded

[All references to Squares are to those of the coloured site-plan, PLATE 74 at end of vol.]

---

[1] This road is shown on the coloured site-plan as a broad stripe leading from the bridge in Square Mvi.

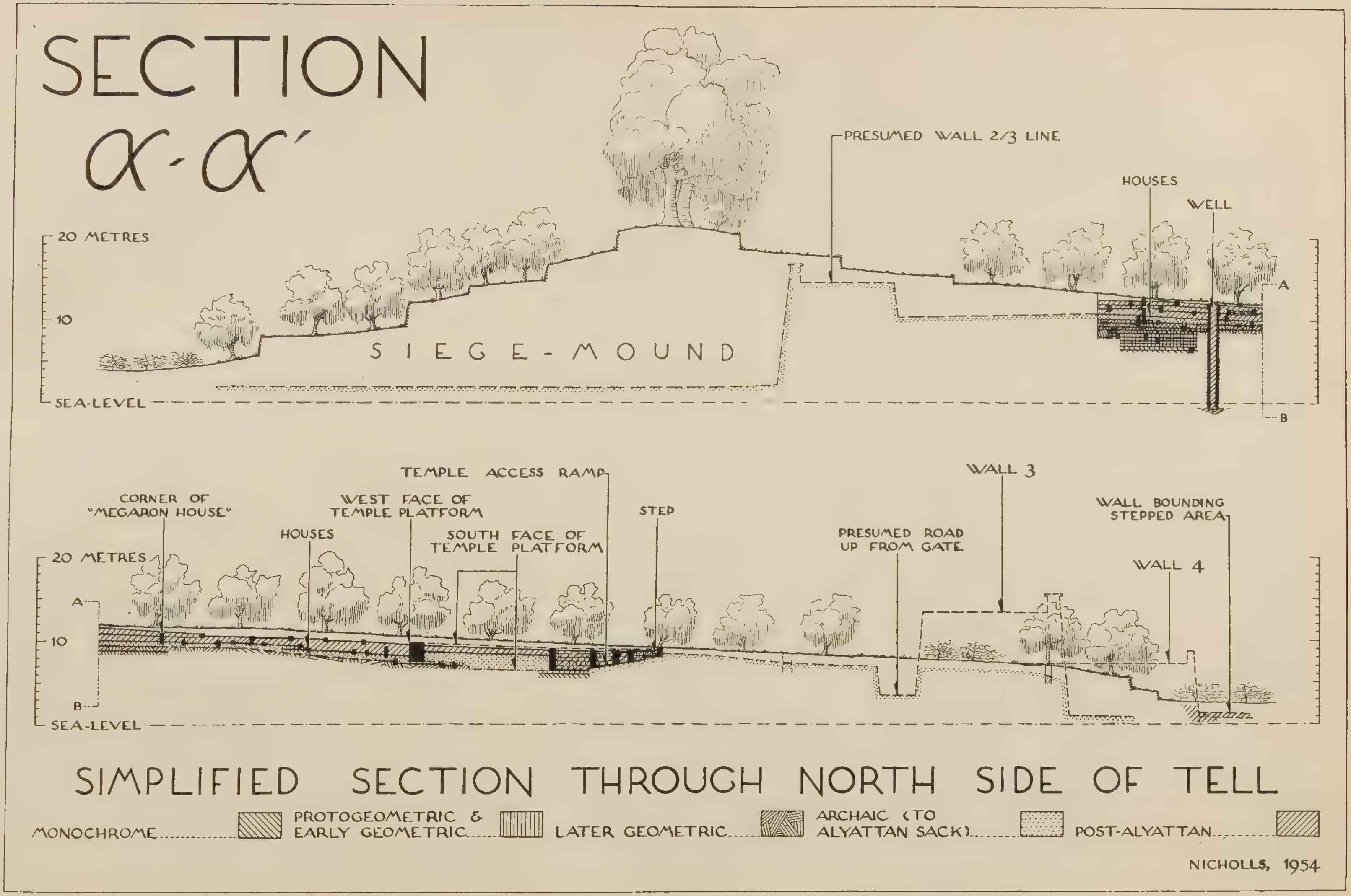

SECTION α-α′
20 METRES
10
SEA-LEVEL
SIEGE-MOUND
PRESUMED WALL 2/3 LINE
HOUSES
WELL
A
B
SIMPLIFIED SECTION THROUGH NORTH SIDE OF TELL
CORNER OF "MEGARON HOUSE"
HOUSES
WEST FACE OF TEMPLE PLATFORM
SOUTH FACE OF TEMPLE PLATFORM
TEMPLE ACCESS RAMP
STEP
PRESUMED ROAD UP FROM GATE
WALL 3
WALL BOUNDING STEPPED AREA
WALL 4
20 METRES
A
10
B
SEA-LEVEL
MONOCHROME
PROTOGEOMETRIC & EARLY GEOMETRIC
LATER GEOMETRIC
ARCHAIC (TO ALYATTAN SACK)
POST-ALYATTAN
NICHOLLS, 1954

Fig. 1. Old Smyrna, section through site

by flat alluvial land, which on the north side forms a sleeve about 150 metres broad separating the site from the adjacent mountain foot. There seems little doubt that in remote antiquity the rocky salient was a small sea-girt peninsula which harboured the earliest observed settlement in the beginning of the Bronze Age.

The mountain-side to the north rises steeply to a crest about a hundred metres high, whose east point is crowned by the Small Fort (p. 5, PLATE 1), while the highest ground at the west end of the ridge bears the ruin of the 'Tomb of Tantalus'. From under this tomb there runs out to the south-west a spur, on and beneath which lies the modern village of Bayraklı. The south slope under the crest of the main ridge formed an extensive cemetery area in classical times, and remains of the best part of sixty tumuli have been noted here; some fragments of archaic terracotta sarcophagi have also been discovered in this area. The low ground on the east of the Small Fort, on the west side of the delta of the mountain streams, has also yielded remains of tumuli and complete or fragmentary sarcophagi in considerable number.

The photograph by Dr. G. U. S. Corbett, PLATE 2*c*, shows the 'peninsula' site of Old Smyrna as seen from the foot of the hill-side on the north, looking across the narrow sleeve of low ground in between; the elevated north-western part with its circular crown appears to the right in this view, and is seen with its superimposed terraces in the photograph PLATE 6*a*, taken from the west by Mr. D. T.-D. Clarke. The view from the crest of the hill-side on the north-east, PLATE 2*a*, by Mr. R. V. Nicholls, shows the peninsula site in the low ground, while across the head of the gulf appears the flat-topped Pagos which dominates the city of Smyrna. PLATE 2*b*, by Foto Kemal, is a view in the reverse direction, looking from the Pagos somewhat east of north across the head of the gulf; Old Smyrna is in the centre of the farther shore, with the bare side of the Yamanlar Dağı at the back.

The SITE-PLAN (PLATE 74) has been drawn by Mr. R. V. Nicholls on the basis of an original survey. The heights above sea-level, as shown on this and the other excavation plans, are based on a number of observations and allow for tidal variation, but it has not been possible to eliminate an element of error, amounting perhaps to a few centimetres, which is due to the rise of the sea through the action of summer winds. On the AREA PLAN (PLATE 1) the contours are based on a Turkish 1:25,000 map. Of the roads and paths indicated in this plan, those on the mountain are based on surface evidence, though no aerial survey was available to check identification and plotting; those on the plain are hypothetical, the original courses being buried deep beneath later silt. The graves shown are those visible in 1952. The area, shown by stippling, of seventh-century extramural occupation is conjectured from the observed distribution of pottery implying habitation (see below, p. 15 n. 27). The fourth-century wall line traversing the Bayraklı spur to the west of the peninsula site is restored from indications on the ground and Prokesch von Osten's description; this is discussed in Mr. Nicholls's report on the fortifications (below, pp. 35 ff.).

The plain of Smyrna has a width at its west end of about 5 kilometres; in the inland direction it extends for about 12 kilometres, gradually narrowing, to the foot of Bel Kahve hill. At the present day the north edge of the plain is punctuated by the larger settlements of Bayraklı and Bornova, and the southern border by a line of smaller villages. The modern city of Smyrna is situated at the south-west corner of the plain, where it occupies the north slopes of the Pagos (Turkish 'Kadifekale') and the flat ground beneath; it covers approximately the same extent as the ancient city founded by Alexander the Great, whose acropolis was formed by the dominating flat-topped Pagos, but it has exceeded the ancient limits in ribbon development to either flank, and extended itself to the north on ground reclaimed from the sea up to the Alsancak point. The position of the ancient city there is attested by abundant remains of antiquity; but it gives no signs of occupation demonstrably earlier than the Hellenistic era, though a damaged late archaic capital of white marble in the Smyrna Museum is reported to come from Halka Pınar a little way outside the modern city on the north-east.[2] In the hills about 8 kilometres south-west of Smyrna the rocky eminence of AKÇA KAYA is crowned by a citadel or fort, whose altitude is given as 430 metres.[3] The fortification seems to be somewhat more than 150 metres in length, with its entry at a cleft in the rocks on the south-west side. The highest ground on the west seems to have been walled off to form a keep, with traces of sturdy buildings. Pottery and fragments of tiles lying on the ground attest occupation in the classical epoch; and a scrap of an Attic black-glazed stemless cup with elaborate stamped decoration which I picked up on the site belongs to the third quarter of the fifth century B.C. The position was again occupied in later Hellenistic or Roman times, to judge by late tile fragments and the unfluted column shafts lying on the ground. To the north of Akça Kaya, 3 kilometres from the coast of the gulf, is the thermal establishment of BALÇOVA, where hot springs issue at the foot of a narrow gorge; the traces of antiquity to be seen there are slight and of a late date.[4] A peninsula a little to the north-west bears the prominent Turkish fort of Sancakkalesi.[5] On the south side of the plain of Smyrna, towards its east end, architectural remains were noted by Ramsay and attributed to a building of the Roman period.[6]

The east end of the plain is blocked by the pointed hill of BEL KAHVE, which is separated from the Nif Dağı on the south by a low saddle which is traversed by the main road leading inland from Smyrna. The elevated summit was girt with a wall in roughly squared masonry, and at its western edge bore a building or tower in isodomic ashlar masonry. A slightly lower, level ridge projecting eastwards from the summit seems also to have been enclosed by walling;[7] and on the slope to the south-west a stretch of massive walling of more primitive aspect bars the top of the valley above the pass (PLATE 5*a*); Ramsay described this wall as being at least 150 feet long and about 20 feet thick.[8] The building remains on the summit itself do not seem to be of archaic date, and the sinkings remarked here by Ramsay[9] would seem to have been the sockets for the Hellenistic inscribed stelae honouring the military commanders. Archaic and classical potsherds can, however, be picked up on the surface here, the earliest being from Late Geometric (or Subgeometric) skyphoi; and an early date for the primitive wall on the south-west slope (PLATE 5*a*) is suggested by a scrap of a bird bowl or similar skyphos that Mr. Hood and I extracted from its core. The occupation on the site and the construction of this wall should therefore go back into the seventh century.[10]

On the north side of the plain no remains have been remarked to the east of Bornova. At BORNOVA itself architectural pieces of Hellenistic and Roman date have been noted,[11] and this provenience is given to a late archaic marble spout in the form of a lion's head, now in the Smyrna Museum (PLATE 3*b*).[12] A little west of Bornova a late fortified enclosure, possibly a small monastery, is built on the lowest slope of the mountainside.[13]

---

[2] İzmir Mus. no. 712. Cf. pp. 16, 31.

[3] A description, with plan, by G. Weber, *AM* x (1885) 212 ff.; cf. Akurgal, 'Smyrne à l'époque archaïque et classique' (*Belleten* 1946) 79, with figs. 9–10. See also the recent observations of G. E. Bean in his article on the Hellenistic defences of Smyrna (*Jahrbuch für Kleinasiatische Forschung* iii. 47 f.).

[4] Cf. Cadoux, *Ancient Smyrna* 17 n. 1.

[5] Spon and Wheler noted some foundations and columns here and believed the site to be that of Old Smyrna. The fort has not been accessible in recent years.

[6] *JHS* i. 63. Cf. Sayce, ibid. 86.

[7] Ramsay, *JHS* i. 64 ff., apparently saw these walls in a good state of preservation; he also, with Dennis, noted another plateau lower down to the east with 'clear traces of a Hellenic city' (ibid. 67). Cf. Cadoux, *Ancient Smyrna* 44.

[8] Ibid. 64.

[9] Ibid. 66.

[10] Most recently G. E. Bean has described this site, giving a plan (*Jahrbuch für Kleinasiatische Forschung* iii. 43 ff., with figs. 1–4). Cf. also p. 7 n. 29.

[11] Cf. Cadoux, op. cit. 183 n. 5.

[12] İzmir Mus. no. 331.

[13] The 'Kastraki', Cadoux, op. cit. 44 no. 9; cf. Akurgal,

The mountain slope above Bayraklı bears two fortified positions. The SMALL FORT (p. 3, marked 'Fort' on the plan PLATE 1), situated at the east end of the crest above the classical cemetery, was investigated and planned by the Miltners;[14] it has an irregular outline measuring about 80 by 45 metres and appears to enclose a cistern near the crest to the north. Farther back behind the crest, north-west of the 'Tomb of Tantalus', a much loftier elevation of about 370 metres altitude is crowned by the fortified structure generally known as the ACROPOLIS OF OLD SMYRNA, which is marked as '4th Century Fort' on the plan, PLATE 1.[15]

This is so situated as to command a wide view of the shoreline and the plain of Smyrna; but the greater part of the cemetery area and the ground at its foot are concealed by the intervening crest, and this dead ground is commanded by the subsidiary Small Fort already mentioned.

The construction on the summit of the Acropolis hill can best be described as a tolerably well-built fortified mansion of modest size.[16] It consists of two halves, of which the eastern one seems to be an open courtyard, apparently containing a cistern near the gate.[17] The main gate leading into the fort pierces the wall which bounds the courtyard on the east side.[18] This east wall is flanked at its north corner by a round tower,[19] whose irregularly circular shape recalls the fourth-century tower at the north-east gate of the peninsula site of Old Smyrna itself. Whether it was a later addition or not, it has been deliberately so built that it does not bond into the wall line itself, and its collapse has revealed the square-built corner of the wall within, set back on the east in the form of a slight jog at the point where the tower abuts on it. At the south corner there was a tower in the shape of a blunted wedge running out on an outcrop of rock to cover the gate. The western half of this structure on the summit of the hill is the mansion proper, with heavy external walls forming the western part of the circuit of the fort and lighter internal ones. The pottery picked up by us, consisting mainly of badly worn fragments of coarse ware and wine jars, but also some scraps of black glaze, corresponds to that from the late fifth- and fourth-century levels at Old Smyrna itself. The building was roofed with the glazed terracotta tiles of Corinthian type that were in common use at Old Smyrna in the late fifth and fourth centuries.

Outside the fort itself there is a maze of lighter walls. Miltner in his plan[20] marks three rectangular structures which he calls 'towers'.[21] They seem rather to be simple buildings, cottages or barns, roofed with tiles of the same kind as the mansion. The other walls of this complex, too, can hardly be interpreted as fortifications. Both the poor quality of their masonry and the relatively small volume of fallen stones show that they cannot have stood much higher than 1½ metres. Apart from one which encircles a large cistern to the north of the fort itself, they must rather have served the purpose of providing pens for flocks that were presumably part of the economy of this curious mansion-fort.[22]

Miltner remarks that the Small Fort sited on the lower crest is certainly contemporary with this 'acropolis', with whose outbuildings its masonry shows a close correspondence;[23] and strategically the one is dependent on the other. On a spur far below the 'acropolis' on the south-west

---

'Smyrne à l'époque archaïque et classique' (*Belleten* 1946) 78 n. 37, where a late date is urged. The tile fragments, apart from the modern ones, seem to be late Roman or post-Roman.

[14] *ÖJh* xxvii, Beibl. 144 ff.; cf. Cadoux, op. cit. 43 f.

[15] The most recent and complete account is that of Miltner in *ÖJh* xxvii, Beibl. 130 ff.

[16] In the left centre of Miltner's plan, op. cit. 131–2, where it is shown as having a length of *c.* 38 m. Ramsay remarked that it 'might be placed inside a respectable English dining-room' (*JHS* i. 67).

[17] Cf. Miltner, ibid. 132.

[18] Ibid. 142, fig. 68.

[19] Ibid. 137–8, fig. 66. Miltner, 139 n. 13, declares that it must be a buttress, not a round tower.

[20] Op. cit. 131–2, fig. 64.

[21] Op. cit. 133–4.

[22] The foregoing description of the 'Acropolis of Old Smyrna' has been provided by Mr. Nicholls, who investigated the structure in 1952.

[23] Ibid. 145.

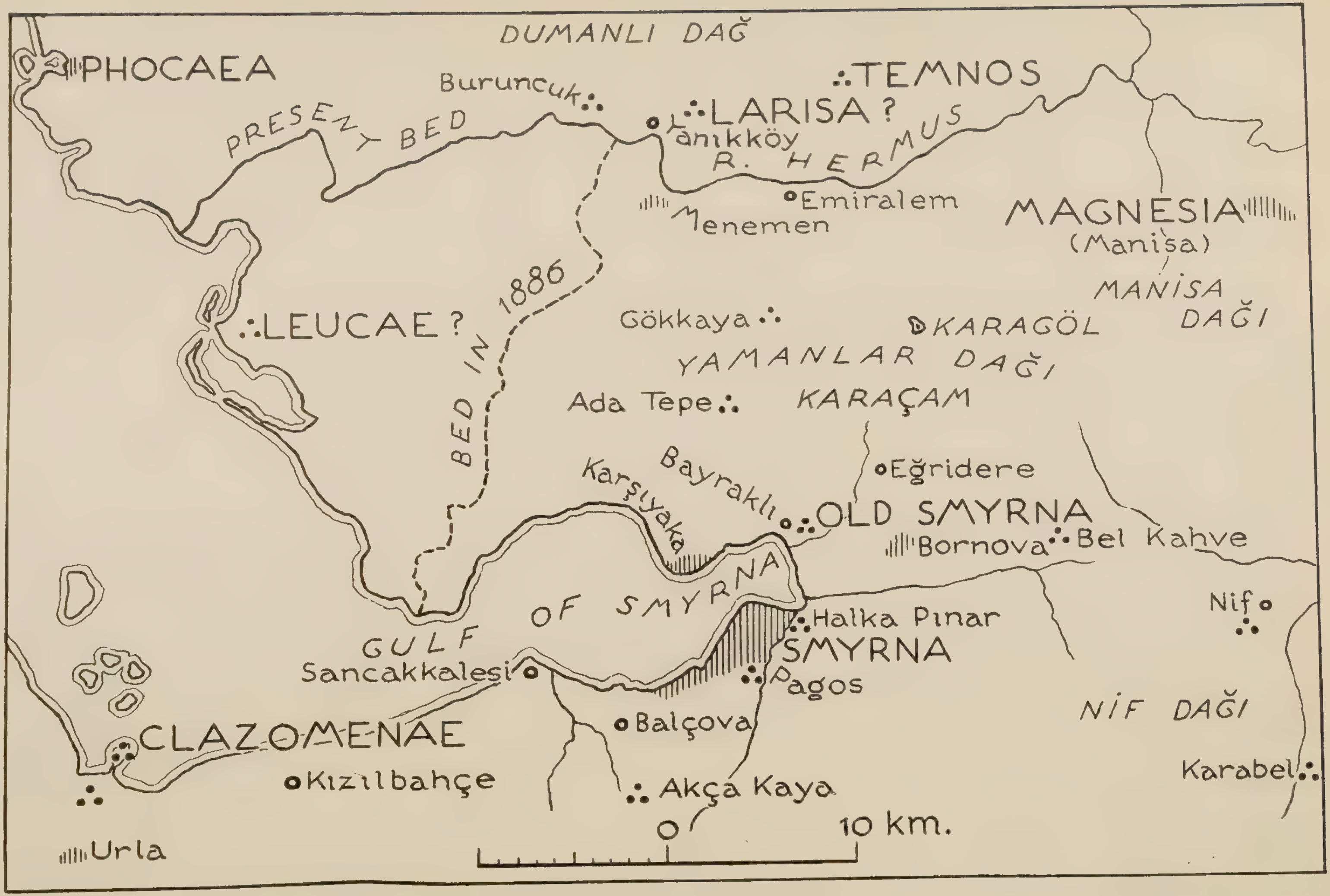

DUMANLI DAĞ
PHOCAEA
Buruncuk
TEMNOS
LARISA ?
Yanıkköy
PRESENT BED
R. HERMUS
Emiralem
Menemen
MAGNESIA
(Manisa)
MANISA DAĞI
BED IN 1886
LEUCAE ?
Gökkaya
KARAGÖL
YAMANLAR DAĞI
Ada Tepe
KARAÇAM
Eğridere
Bayraklı
Karşıyaka
OLD SMYRNA
Bornova
Bel Kahve
GULF OF SMYRNA
Halka Pınar
SMYRNA
Nif
Sancakkalesi
Pagos
NİF DAĞI
Balçova
CLAZOMENAE
Kızılbahçe
Karabel
Akça Kaya
0
10 km.
Urla

FIG. 2. THE ENVIRONS OF SMYRNA

the top of a crag has been worked off with a rock-cut pit on the top and a double stairway leading up; traces of walls have been noted here, but the purpose of the platform remains obscure.[24]

At the apex of the delta of the stream on the east of the gravefield ('River Meles' on the plan PLATE I), between the two arms of the watercourse, some remains of late antiquity have been noted;[25] and there are faint traces of Roman habitation on the east edge of the delta. Above the narrow gorge in which the main western arm of the stream descends through a series of rock pools fringed by oleanders lies a small grassy mountain valley called the LAKKA (off the plan, PLATE I), on whose north side a denuded bluff bears some traces of the footings of fortification walls about I metre thick; this is of Hellenistic or Roman date on the evidence of the few corroded sherds and tile fragments picked up there, though one sherd from a 'filleted' amphora may perhaps rather be of the fourth century. South of this, on the steep ridge east of the gorge, are traces of a more recent settlement to which the name 'Eski Bayraklı' ('Old Bayraklı' on the plan, PLATE I) is applied. A track leads from the stream delta up the gorge into the Lakka, at whose eastern end it turns north along the west bank of the other arm of the stream. The course of an old carriage road of about 2·5–3 m. width can be recognized at points on the slope here; and there are considerable traces of walling and of buildings, with ancient tiles of late form, immediately above the road here. The modern path continues upwards through a gully, where traces of a building with similar tile fragments are to be seen, and reaches the small village of Eğridere, where it is joined by a broader path ascending from Bornova (at a distance of less than an hour). Above this village, at the point where the route crosses a crest, there is a considerable pile of rubble with similar fragments of ancient tiles, evidently the remains of a fort guarding the road; beyond this the track continues up a valley towards the crossing of the Yamanlar Dağı by the Karaçam, whence it seems to descend by the tarn of Karagöl to the valley of the Hermus opposite the ancient Temnos.

Other fortified positions have been noted in the Yamanlar Dağı on the north side of the inner gulf of Smyrna. The existence of regular ferry services across the gulf, in Roman times at least, is suggested by the fragment of a decree directed against a ring which was attempting to secure a monopoly of ferry services by cutting prices.[26] The spit of alluvial land on which the modern suburb of Karşıyaka stands can scarcely have been formed from the sea bed in ancient times, and it may well be that the terminal of the ancient ferry service lay considerably farther north at the west foot of the Yamanlar Dağı. A small citadel site has been noted by Professor Bean at Kücük Yamanlar above Karşıyaka.[27] The more important fortified position of Ada Tepe commands the upper Yamanlar valley,[28] and was clearly one of the principal outposts of the Hellenistic city of Smyrna.[29]

The site of Old Smyrna at Bayraklı was investigated in 1930 by F. and H. Miltner, who dug four test pits and followed the line of the city wall on the east. Their results are published, together with a plan of the site, in *ÖJh* xxvii Beiblatt.

The Anglo-Turkish excavations on the site, conducted in collaboration by Professor Ekrem

---

[24] Miltner, op. cit. 146 ff.; Cadoux, op. cit. 41. We were not able to visit this monument.

[25] Ancient worked blocks, small unfluted column shafts, and some fragments of tiles; the area, shown by stippling on the plan, PLATE I, has some modern habitation also.

[26] *SIG*³ 1262; cf. Cadoux, op. cit. 190.

[27] *Jahrbuch für Kleinasiatische Forschung* iii. 49 f., with figs. 7–8; also a tower at Çobanpınarı, ibid. 50.

[28] See the description by G. E. Bean and Rüstem Duyuran, *JHS* lxvii. 128 ff.

[29] The outer defences of Hellenistic Smyrna are discussed by Bean in the article cited n. 27, which did not appear in time to receive full consideration in the text of the present report. Bean rightly stresses that in large part the fortifications here considered constituted the defensive system of Hellenistic Smyrna, but Akurgal's pre-Hellenistic dating of the earliest remains at Akça Kaya and Bel Kahve seems to me justified.

Akurgal of Ankara University and by the British School at Athens, were begun in June 1948, and continued in annual campaigns until 1951; some minor soundings were also made in 1952. The following members of the British School at Athens took part in the excavations: Mr. J. K. Brock, who played a major part in guiding the excavations on the British side in the 1948 and 1949 seasons, Mr. R. V. Nicholls, who acted as dig architect and surveyor on the British side, Miss E. A. B. Petty (Mrs. Corbett), who undertook the drawing of objects, Mr. J. K. Anderson, Mr. J. Boardman, Dr. W. C. Brice, Mrs. Brock, Mr. D. T.-D. Clarke, Mrs. Cook, Dr. G. U. S. Corbett, Mr. P. E. Corbett, Miss D. D. H. Dettmann (Mrs. Kalfas), Dr. A. E. Ozanne, Miss D. H. F. Gray, Dr. J. F. Healy, Mr. M. S. F. Hood, Mr. A. G. Hunter, Dr. L. H. Jeffery, and Mr. B. B. Shefton. Mr. Stelios Katsarakis was the dig mender and technician. To all these colleagues my thanks are due.

An immeasurable debt of gratitude is owed by the British excavating party to Professor Akurgal, whose initiative and generous co-operation at all stages ensured the most favourable circumstances for the British participation in the project; so also to his students, especially Mr. Ahmet Dönmez, Dr. Baki Öğün, and Dr. Yusuf Boysal. The Director of the Archaeological Museum of İzmir, Mr. Hakki Gültekin, together with his staff, has facilitated in every way the treatment and study of the finds. Thanks are especially due to Dr. Hamit Koşay and the Turkish Antiquities Department, to the late Professor J. Garstang and Mr. Seton Lloyd of the British Institute of Archaeology at Ankara, and to Mr. R. E. Wilkinson, H.M. Consul in İzmir, for their good offices in promoting the excavations; and to the staff of the Monopoly Wine Company, who afforded generous facilities for work on the site. My thanks are due to the members of the Managing Committee of the British School at Athens under the chairmanships of Professor B. Ashmole and Professor R. J. H. Jenkins, and to Professor R. J. Hopper and Dr. L. H. Jeffery, editors of the *Annual*.

Grants were generously made from the Craven Funds of the Universities of Oxford and Cambridge towards the cost of printing the site-plan.

II. THE HISTORY OF OLD SMYRNA

PREHISTORIC

The occupational history of the site, like its name Smyrna, goes back beyond Hellenic times. The earliest observed prehistoric habitation, dating to the third millennium B.C., and contemporary and culturally akin to that of the First and Second Cities of Troy,[1] has been encountered only on the rocky core of the peninsula where occupational strata of this era were revealed in a trench dug down the face of the rock (Square Nxiv).[2] Deep soundings at other points (Squares Exii–xiii, Jxviii–xix) yielded no trace of third-millenium occupation, and it seems unlikely that the occupation in this period extended far to the east.[3] The peninsula in fact seems to have been much smaller at that time. The lowest occupation in the trench in Square Jxviii–xix, in the third metre below modern sea-level, seems to be of about the beginning of the second millennium; and since it is unlikely, assuming a fairly steady rate of submergence of the coast (cf. n. 13), that prehistoric occupation could lie much deeper than this, it must have been about the end of the third millennium that the east shore of the peninsula advanced to this point. A considerable upwards slope to westward from this point in early times may be inferred from the fact that a stratum of early Geometric pottery was cut in works of field improvement in 1951 about the 8-metre contour in Squares L–Mxvi (i.e. about 2 metres higher than in Square Jxviii). A similar series of second-millennium levels in Square Exii, not explored to the bottom, attests the growth of the peninsula on the north-east. The gap in time between the second-millennium and the third-millennium levels revealed in these trenches has not been closed, though isolated fragments of pottery found in the course of field improvement north-west of the trench in Square Nxiv may belong to this intermediate phase. The second-millennium occupation, of which a number of successive levels were exposed in the deep soundings, seems perhaps to be more akin to Anatolian than to Aegean cultures. The expansion of the habitable peninsula, assisted by the action of streams flowing from the mountain-side into the embracing arm of the sea, was more rapid in the second millennium than at any other time, and the settlement here in the advanced Bronze Age may have been a not inconsiderable one by the standards of this coast.

The testimonies to the foundation of Smyrna in ancient writers have been assembled by C. J. Cadoux in chapter ii of his history of the ancient city, and it is sufficient to refer the reader to this work for an unprejudiced account of the legendary origins, in which Smyrna is associated with Amazons, Lelegians and Lydians, Tantalus and Theseus, and the Etruscan exodus.[4] It is noteworthy that the original city of Tantalus was not located by the ancients at Old Smyrna, but on the heights of Sipylus behind, and similarly the settlement of the prehellenic Lelegians is said by Strabo to have been on the site of the city of his own time.[5] But these traditions gain no support from modern archaeological investigation. Our discoveries in fact point to the site of Old Smyrna at Bayraklı as having been the centre of habitation in these parts from the beginning of the Bronze Age into Hellenic times.[6] Yet, tempting as it is to see in this modest peninsula site the capital city of Tantalus and the rival of that of Ilus, against whom Tantalus is reputed to have waged an unsuccessful war,[7] the discoveries in the prehistoric levels at Old Smyrna do not suggest a splendour in any way comparable to that of Troy. Similarly, there is no recognizable mention of Smyrna in the surviving Hittite records, and our excavations have not shed any direct light on the imperial Hittite penetration which is attested by the warrior god reliefs in the Karabel a few hours' walk to the south-eastwards.[8]

---

[1] Cf. Akurgal, *Bayraklı* 54 f.

[2] Owing to the sharp fall of the rock eastward at this point it was impossible, without opening an additional trench to a great depth, to ascertain whether there is a yet earlier stratum of occupation on the site.

[3] On the north part of the site occasional second-millennium sherds were found in classical levels, perhaps from the spoil of wells; but none of the third millennium came to light here. The sounding in Square Jxviii–xix was carried to a depth of nearly 3 metres below modern sea-level without reaching the bottom of the habitation on the spot.

[4] *Ancient Smyrna* (1938). It is appropriate here to record the indebtedness of the excavating party to this book, which is distinguished alike by profound scholarship and conscientious accuracy.

[5] xiv. 634. Cadoux, op. cit. 58 n. 3, does not consider the location in Strabo to be specific, and it is possible that Strabo was not using his words precisely.

[6] Bittel has suggested that prehistoric settlement may underlie the presumed Metröon on the low hump of

EARLIEST GREEK SETTLEMENT

Occupation of the Protogeometric period, overlying the prehistoric, has been uncovered in trenches in Squares Jxviii–xix and Exii–xiii, and in the deeper excavated parts of the big excavation in Squares F–Gxi–xii where three main strata were revealed. Habitation was probably thinly scattered on the ground, and seems to have been confined to the peninsula site. The discovery of this Protogeometric habitation, superimposed on the prehistoric levels, shows that the earliest Greek city (following its predecessor) extended virtually to the limit of the site at the north end; and Protogeometric sherds were discovered in the filling of the gate tower at the north-east corner (Squares C–Dxvii). In view of the consistent fall of the ground on the east edge of the hill and of the necessary assumption of the existence of a collapsed fortification close inside the line of the earliest identified Greek one, it seems safe to infer that on the east also the boundary of the city of Protogeometric—and probably also of later prehistoric—times did not differ appreciably from that of its successors. In the south part, where the planes of fourth- and seventh-century occupation sink steadily towards the flat ground, it is probable that the earliest Greek city was somewhat less extensive.

The Protogeometric pottery at Smyrna is akin to that of Athens in certain of its forms (especially in the later stages), but in shapes like the skyphos it manifests an individual character which is not directly connected with any mainland Greek fabric.[9] We may therefore assume a steady local production, Smyrnaean or North Ionic, throughout the Protogeometric era. The earliest examples seem to correspond to a by no means late phase of the Protogeometric in Athens (cf. the oinochoe PLATE 5*b*), and may be dated around 1000 B.C. (or, at least, not much later) by the prevailing chronology. The study of the painted and monochrome wares from these strata is not completed, and conclusions derived from them must be regarded as provisional. There are, however, indications that the abundant monochrome ware contemporary with the Protogeometric is distinct from that of the late prehistoric occupation, and is from the outset rather to be related to the Aeolic wares of Lesbos. This may be considered the characteristic Aeolic ware of the Greek dark age. The painted Protogeometric and Geometric pottery, though apparently—in the later stages at least—less uncommon in the Aeolic cities of the Hermus valley than in Lesbos, is therefore perhaps rather to be considered as reflecting Ionic culture; it would thus suggest, when taken in conjunction with the Protogeometric strata in Miletus at the other end of Ionia,[10] that the main Ionic settlement of this coast is no less ancient than the Greek

---

Tepecik at the edge of the modern city (*Kleinasiatische Studien* (1942) 175); but so far as I know this is not supported by actual discoveries, and I suspect that the hillock is formed of rock and not a settlement mound. A bronze thrusting sword, similar, as Miss D. H. F. Gray tells me, to those current in the earlier phases of the Mycenaean (L.H. phases I–IIIA), was found in 1942 in the fill of the Roman agora at Smyrna (*AA* 1943, 203, fig. 3; Naumann and Selâhattın Kantar, *Belleten* vii. 213–25). Bittel's conjecture that it came from a grave in the vicinity seems just (*Kleinasiat. Studien* 175); but by itself it does not constitute evidence of a settlement at this point in prehistoric times. Bittel was of course writing before the discovery of the prehistoric site at Old Smyrna.

[7] Nicolas of Damascus, Jacoby *FGH* 90, F10.

[8] Cf. Cadoux, op. cit. 33 ff.; Bittel, *Die Reliefs am Karabel* (*Archiv für Orientforschung* xiii); J. M. Cook, *Türk Arkeoloji Dergisi* vi–2, 3 ff.

[9] I am indebted to Mr. V. R. d'A. Desborough for an opinion based on examination of sample bags.

[10] *Bericht VI. Int. Kongr.* 327 ff.

settlement at Smyrna. The absence of Protogeometric and in the main of Geometric pottery on the excavated site called Larisa in the Southern Aeolis is perhaps to be explained on other grounds.[11]

The extent of the peninsula site is clearly defined on its east side; and it has been assumed by us that, despite the silting up on this side in prehistoric times, the site was in large part sea-girt in early Greek days. The presence of sand, and of water-worn pottery and boulders at the foot of the archaic city wall on the east side, supports this view, and a stepped ramp of classical date exposed in a sounding at the foot of the bank (Square Dxviii) is difficult to explain save as leading to a beach or landing stage. The west side of the site must then have been bounded by the gulf, either on the line of the Bornova road embankment (Square Oxx–xxii) or a little to the south-west of this,[12] while the arm of the sea on the east may have provided a sheltered anchorage

---

[11] For this material cf. *Larisa* iii. 169 f. The identification of this site at Buruncuk is by no means secure, and the absence of early occupation there, though ascertained by extensive excavation, cannot be safely used to support a general lowering of the date of the primary Greek settlements on the coast. Similarly the lack of Protogeometric at sites like Ephesus and Priene carries little weight when no systematic attempts have yet been made to locate the earliest Greek settlement there; at Ephesus and Priene these may lie concealed under river silt (for Priene see Hiller, *Inschr. Priene* p. iv). Old Smyrna in fact shows most clearly how deceptive appearances can be; even after the Miltners had probed the site in a number of places in 1930 the existence of rich Protogeometric deposits was still unsuspected. This elusiveness of the Protogeometric and earlier Geometric is probably to be explained in some degree by the small size of the original Ionic foundations, but much more byt he unsubstantial character of the settlements in their early stages. Sealed by the accumulation of successive deposits, the lowest Greek strata were already too thoroughly covered over to be disturbed by the large-scale constructional work of archaic times, so that for the most part the earliest sherds encountered in the uppermost levels on Ionic sites are of the Late Geometric. For Larisa see below, p. 20 n. 47.

The number of Protogeometric sherds noted in Samos and Chios is very small (Desborough, *Protogeometric Pottery* 215 ff.); but the excavations were at sanctuaries, not settlement sites. At the foot of Mycale Protogeometric vases have been recovered from graves at Canlı (Desborough, op. cit. 221), perhaps belonging to the city of Melia that perished before the end of the dark ages; and at a few hours' walk north of this, strata of occupation going back apparently to Protogeometric are exposed by the sea on the little peninsula site at Kuşadası (p. 20 n. 46), which may be identified with Pygela. Though the time has not yet come to forget Wilamowitz's warning that the early Greek finds at Miletus did not justify the assumption of an equally early date for other foundations on this coast (*SBBerl.* 1906, 77 = *Kl. Schriften* v. i. 173), there is no good reason for lowering the date of the Ionic migrations to advanced Geometric times.

[12] A few late sherds, probably of Hellenistic date, have been picked up in the low-lying pasture immediately to the south-west of this road.

[13] In a deep sounding in the trench in Square Jxviii–xix occasional prehistoric potsherds, apparently not water-worn, were still being recovered at the bottom of the shaft 2·70 m. below modern mean sea-level when work was abandoned. Well-preserved fig-wood poles were, however, found at 1·80 m. below sea-level, indicating that at this level the ground had been sufficiently damp to preserve the wood; thus, allowing a mean ground water-level in accordance with our observations at something over one metre above sea-level, the sea-level of the beginning of the second millennium B.C. should not have lain more than 3 metres below the modern sea-level. For sea-level in classical times the best evidence is provided by the stone-lined well in Square Fxii and the Fountain House (Square Lxxiii). In the well the pottery at 0·10 m. below modern sea-level was stained with green slime; from 0·20 m. below modern sea-level downward fragments of wine-jars preserved their original washed surface, and much of the pottery was bleached as though it had been constantly in wet ground since the well was abandoned in the fourth century B.C.; resin was preserved in the bottom of wine-jars here. The wooden raft supporting the stone shaft lay about half a metre below this. Allowing a full metre for the height of ground water above sea-level at this point we can suggest a minimum figure of 1·20 m. for the rise in sea-level. In the Fountain House the outlet pipe and water mark in the draw basin are at 0·76 m. below modern sea-level: presumably late summer ground-water level in classical times was slightly higher than this (perhaps *c.* 0·70 m. below modern sea-level), and since ground water lies lower at this end of the site (minimum 0·30–0·40 m. above modern sea-level) the classical sea-level is estimated to have been not much over 1 metre below the modern. Since observations at other points on the edges of the site conform to this estimate, a figure of between 1 and 1½ metres for the sinking of the coast here since the fourth century B.C. should not be wide of the mark.

In a series of papers published half a century ago Ph. Negris made a very strong case for a current phase of marine transgression in the Greek seas, and on a basis of submerged building traces and constructional levels he concluded that the land has sunk as much as 3–3·50 m. since ancient times in its relation to the sea (*AM* xxix. 360 ff.). Published archaeological observations on the east shores of the Aegean do little more than confirm the fact of general submergence (e.g. Antissa in Lesbos, *BSA* xxxii. 42; Chios, *BSA* xli. 33, *ILN* 30. 1. 1954, p. 159; Samos, *AM* lv. 34, lviii. 158 f.; Gulf of Syme, *Archaeologia* xlix. 350, 'probably several feet', p. 355), and this can indeed be observed at a great many points on the west coast of Asia Minor (e.g. Cyme, Clazomenae, the Erythraea, Kuşadası (Pygela), for small boats. It is not certain whether the sleeve of low ground on the north of the site was also under water in early Greek times. A resident of Smyrna informed us that G. Weber used to point out large stones on the northern edge of this low ground and believed them to be bollards for mooring boats; but since there must be 3 or 4 metres of silt overlying the ancient beaches here, his explanation should be treated with caution.

Exact observation of the ancient shoreline is excluded by this deep deposit of silt; from indications at different points on the site it appears that the coast has sunk considerably since ancient times, and that in relation to the land the sea-level has risen by upwards of a metre since the fifth century B.C. and by the best part of 3 metres since the beginning of the second millennium B.C.[13] Ancient testimonies to the exact position of the site in relation to the sea are confined to the word ἁλιγείτων, presumably applied to the early city, in the Homeric Epigram iv,[14] and Strabo's and Aristides' mentions of the old city as being on the coast (see below). But it is beyond doubt that, where possible, the earliest Greek settlers on this coast chose sites which were not only adjacent to the sea but in the main surrounded by water; cities so located had the advantage of a short land frontier combined with sheltered anchorage at the isthmus. This conception of the migration settlement is embodied in Homer's description of the new city founded by the Phaeacians when they removed to Scheria, with boats drawn up on either side of a causeway and with an embattled wall circuit shielding the approach on to the peninsula.[15] It is evident that in his description the poet was visualizing a coastal city such as the Ionic ones of his own day. There are indications in the Odyssey, as also in later literature, that the imaginary land of Scheria was envisaged as being in western seas rather than in the east; and it is therefore all the more pertinent, in considering the prototype of Homer's model city of the Phaeacians, to note that the goddess Athena, returning direct from this city to Athens, made her landfall at Marathon (*Od.* vii. 78 ff.), as do travellers on the air route from Smyrna to Athens at the present day. It seems a fair assumption that at that moment Ionia was in the poet's mind.

The identification of the site excavated by us at Bayraklı as the early city of Smyrna cannot now be questioned. Aelius Aristides places the old city—that distinguished from the Smyrna of his own day by the term ἡ νῦν ἀρχαία—under Mount Sipylus παρὰ τὴν χηλὴν τῆς ἠιόνος.[16] Strabo

---

Myndus, Halicarnassus, Old Cnidus (Burgaz), Loryma). Von Gerkan has given a figure of 1·50 m. at Miletus (*Milet* ii. 3. 5), but it is open to question whether this (like Schweinfurth's estimate of 2 m. at Alexandria (*AM* xxv. 273 n. 2), Evans's at Khersonesos and Komo in Crete (upwards of 2 m., *P. of M.* i. 298; ii. 1. 87), and Negris's own of 2·10 m. from a mausoleum at the Lycian Telmessus, *Délos et la transgression actuelle* (1907) 21) can be regarded as anything more than a minimum calculation of the submergence since ancient times. There is therefore an alternative possibility that ground-water level on the site at Old Smyrna has not maintained a constant relation to sea-level, and that the figures quoted above for sea-level in classical times are on the low side. It is at the same time worth remark that the calculations here offered suggest that the rate of submergence at Smyrna may have been rather more rapid in the second and early part of the first millennium B.C. than it has been since classical times, whereas at Delos Negris inferred that it was slower in pre-Hellenistic times (1 m. per millennium against a subsequent rate of 1·50 m.).

I have unfortunately failed to trace an article by von Gerkan entitled 'Meereshöhen u. Hafenanlagen im Altertum'. Mr. N. G. L. Hammond (*JHS* lxxvi. 35) quotes evidence for a rise of the sea by 5 to 6 feet in the Saronic Gulf and on the coast of the Epirus, and considers that the rise may be referred to a general alteration in the level of the oceans.

[14] The second epithet ποντοτίνακτον printed in modern texts is Pierson's emendation of the MSS. ποτνιάνακτον. Neither ποτνιάνακτος nor ποντοτίνακτος is otherwise known. It seems clear that the composer of the epigram, as also the author of the Herodotean Life in which it was incorporated, was a native of the Southern Aeolis and likely to be familiar with the ground; so that it is relevant to object that the shallow waters of the innermost recess of the Hermeian Gulf could not fairly be described as πόντος, as the sea here is not open enough to allow Old Smyrna to be conceived as smitten by the main. From the excavations at the temenos on the site it appears that the principal deity of Old Smyrna was a goddess, probably an Artemis or Μήτηρ; the epithet ποτνιάνακτος ('ruled by the Lady') would therefore be appropriate (for the passive use of the verb ἀνάσσω cf. *Od.* iv. 177).

[15] The Phaeacian migration and settlement on Scheria is described in *Od.* vi. 3 ff.; the peninsular position with the fortification, the narrow causeway, the two anchorages with the agora, and the sanctuary in vi. 262; in vii. 39 ff. Odysseus descends to the town, admiring the anchorages, agoras, and wall circuit. For sites of this type cf. Thuc. i. 7.

[16] xvii. 4. He made this city intermediate both in time and position between the shattered original foundation of

also speaks of the old Greek city of Smyrna (ἡ παλαιὰ Σμύρνη) and in passing up the Ionic coast from south to north locates it in another gulf beyond the new city of Smyrna; the distance (20 stades) that he gives as separating the old city from the new, if measured across the gulf from the northern parts of the latter, is not incorrect.[17] There is no other site in the area indicated by Strabo and Aristides, or indeed anywhere else on the Smyrnaean littoral, which gives evidence of substantial early Greek habitation, whereas the excavated remains on the peninsula site at Bayraklı indicate the presence there of one of the original Greek foundations, which developed into a flourishing archaic Ionic settlement equipped with strong walls, commodious houses arranged on a town plan, and an important cult. The literary testimonies allow only of a single position for the city between the time of the Aeolic migrations and the capture by the Lydians.[18]

The main ancient tradition shows Smyrna as an Aeolic foundation. Herodotus, who certainly regarded the initial Greek settlement here as Aeolic, relates how the city fell into the hands of Ionians who had been expelled from their home at Colophon and sought refuge at Smyrna; after they had closed the gates against the inhabitants, an agreement was reached by which the Colophonian intruders handed over the movable possessions, but retained their hold on the city.[19] This tradition of an original Aeolic settlement and an unlawful dispossession by Colophonians agrees with the seventh-century testimony of Mimnermus—himself professedly a descendant of the intruders—and may be regarded as assured.[20] Alternative versions which allege a yet older Ionic foundation from Ephesus[21] or Athens[22] can almost certainly be dismissed. The great bulk of monochrome pottery found in the lowest Greek levels in the excavation seems, in the present state of our knowledge, to confirm the tradition of an original Aeolic foundation. Towards the close of the Protogeometric era (perhaps in the early ninth century B.C.) the painted pottery comes to equal, if not surpass, the monochrome ware in volume; in the succeeding middle Geometric stage the painted ware is dominant, and in the eighth-century levels the monochrome is at its lowest ebb. It would not be possible, on the evidence of the pottery, to decide whether the process by which Smyrna became a dominantly Ionic city was a gradual one or resulted from a single action. But it seems clear that Smyrna had become a thoroughly Ionic city at latest by the beginning of the eighth century, and that Ionic influence—whether or not it was already maintained by a substantial Ionic element in the population—was steadily increasing during the ninth century. The excavations have given no indication of a break in the cultural tradition or material circumstances of life in Smyrna in this epoch. Following a period in which there was no fortification in good repair, a new city wall ('Wall I', see below, pp. 122 f.) was constructed, on the landward side at least, about the beginning of the middle Geometric stage, probably around (or not long after) the middle of the ninth century; it seems to have had a gate, covered by a bastion, at the north-east corner (Square Cxvii), where the sturdy andesite footing was surmounted by courses of ashlar masonry in white tufa. This notable fortification may be attributable to an expectation of hostile action—at a time far anterior to any known Lydian aggression;

Tantalus on Sipylus and the city of his own day. Pliny also refers to Tantalus' city of Sipylum and to Archaeopolis which succeeded it (*NH* v. 117); and the name Naulokhon, which Stephanus Byz. (s.v. Σμύρνα) gives as an earlier name of the city, seems most applicable to the position at Bayraklı. Cf. the discussion of the relevant testimonies and monuments in Cadoux, *Ancient Smyrna* 36 ff.

[17] xiv. 646. It is of course possible that Strabo may have had in mind the fortified positions and monuments on the mountainside above Bayraklı (pp. 3, 5 f.) rather than the peninsula site below. His measurement would then be too short unless its southern terminal was provided by a suburb well outside the limits of the city proper; but many of Strabo's measurements on this coast are demonstrably short.

[18] Hdt. i. 150; Strabo xiv. 634, 646.

[19] Hdt. i. 149 f.

[20] Strabo xiv. 634. Cf. pp. 27 f.. The phrase θεῶν βουλῇ, with which Mimnermus justifies the Colophonian capture, is answered by that applied in the Homeric Epigram iv to the original Cymaean foundation, ἥν ποτ᾽ ἐπύργωσαν βουλῇ Διὸς αἰγιόχοιο λαοὶ Φρίκωνος: and there are other echoes of the Mimnermus passage in the epigram.

[21] Strabo xiv. 634.

[22] Cf. Cadoux, *Ancient Smyrna* 48.

but since the story in Herodotus implies the existence of a serviceable fortification at the time when the Colophonians seized the city, it cannot be argued that this wall was built by the Ionians—even though it may well be the case. Herodotus mentions that the Smyrnaeans applied, unsuccessfully, for admission to membership of the Panionion.[23] If this statement is correct, it follows that the federation of the twelve Ionic cities was completed before the capture of Aeolic Smyrna by the Ionians; and since the pottery shows that the city was completely Ionic by the beginning of the eighth century, the destruction of Melia[24] and the foundation of the Panionion would have to be dated back into the later ninth century at the latest. But Herodotus' remark here is a somewhat casual one and perhaps does not justify the inference.

The Ionic City

The eighth-century habitation on the site appears to have been dense, to judge by the very small, closely packed curvilinear structures of this era. The fortifications, which seem to have become decrepit, were remodelled in the second half of the eighth century; and the circuit was then extended to the full limit of the ancient site on the south. About this time also the import of luxury goods from both sides of the Aegean becomes appreciable. The strata of the second half of the eighth century have yielded the first fragments of export wine-jars of Chian manufacture and wine-jars in a grey ware, perhaps Lesbian, and of the balloon amphorae in which Attic oil is believed to have been exported; and early Protocorinthian pottery, together with a few scraps of Chian fine ware and of large Attic figured vases of the Dipylon class, has come to light in the same levels (see below, pp. 138f.). Two large fragments of Ionic vases, dating to the first and second halves of the eighth century respectively, are illustrated in PLATE 5*c–d*. Much Protocorinthian pottery of about the turn from the eighth to the seventh century (pp. 139ff.) was found in a stratum in the big trench (Squares E–Gxi–xiii), being associated with a catastrophe which overtook the houses there. A similar collapse, followed by the building of fresh curvilinear constructions, was noted in the sounding in Square Jxviii–xix; but the evidence at this point is not sufficient to show whether it occurred at precisely the same time and so whether it indicates a single general destruction on the site. The city wall also seems again to have been in ruins before the second quarter of the seventh century, when pot-burials of infants and children were sunk in its rubble on the east edge of the site; in this case fault lines noted in the crude brick core of this second wall indicate that its collapse may have been occasioned by an earthquake rather than by hostile operations. The first recorded attack on Smyrna was that of Gyges, who seems to have revived the Lydian power and pursued a policy of aggression towards the Greek cities of the coast.[25] The literary evidence for this attack indicates a partial success, followed by a decisive defeat; it is questionable whether Gyges in fact succeeded in entering the peninsula city;[26] and, even if his attack can be dated early enough, there seems hardly to be adequate reason to connect it with the catastrophe noted on the site. In view of the subsequent development of the city, it is not unlikely that the collapse of both houses and fortifications reflects a single catastrophe by earthquake about 700 B.C.; on the east side, at least, the fortifications do not seem to have been renewed until the late seventh century (see below, pp. 124ff.).

The period that follows appears from the excavations as one of great expansion. Some curvilinear houses seem to have been built in the early seventh century, but in the main the domestic architecture of this century is marked by a planned spaciousness and attention to uniform layout on a north–south axis. It seems also to have been about the beginning of the seventh century that an area at the north end of the hill against the city wall was reserved as a sanctuary of the patron goddess. At about this time also habitation seems to have spread off the peninsula to the neighbouring coast; for there is reason to suppose that in the early seventh century the strip of coast to the north (if not also to the east) and the slope of the hill-side towards the present village of Bayraklı on the north-west had become inhabited quarters.[27] This expansion,

---

[23] i. 143, 3. Cf. Cadoux, op. cit. 67f.

[24] For this see Keil, *RE* s.v. Melia (3); a new discussion of the problems by Roebuck, *CP* 1955, 26ff.

[25] Hdt. i. 4.

[26] Pausanias speaks of Gyges and the Lydians as holding the πόλις and being expelled from it (iv. 21, 5); but Hdt. i. 14 does not imply more than an invasion of the territory, and the anecdote related by Plutarch on the authority of Dositheus shows the Lydians as unable to enter the city (*Parallela* 30). Cf. Cadoux, *Ancient Smyrna* 80f.

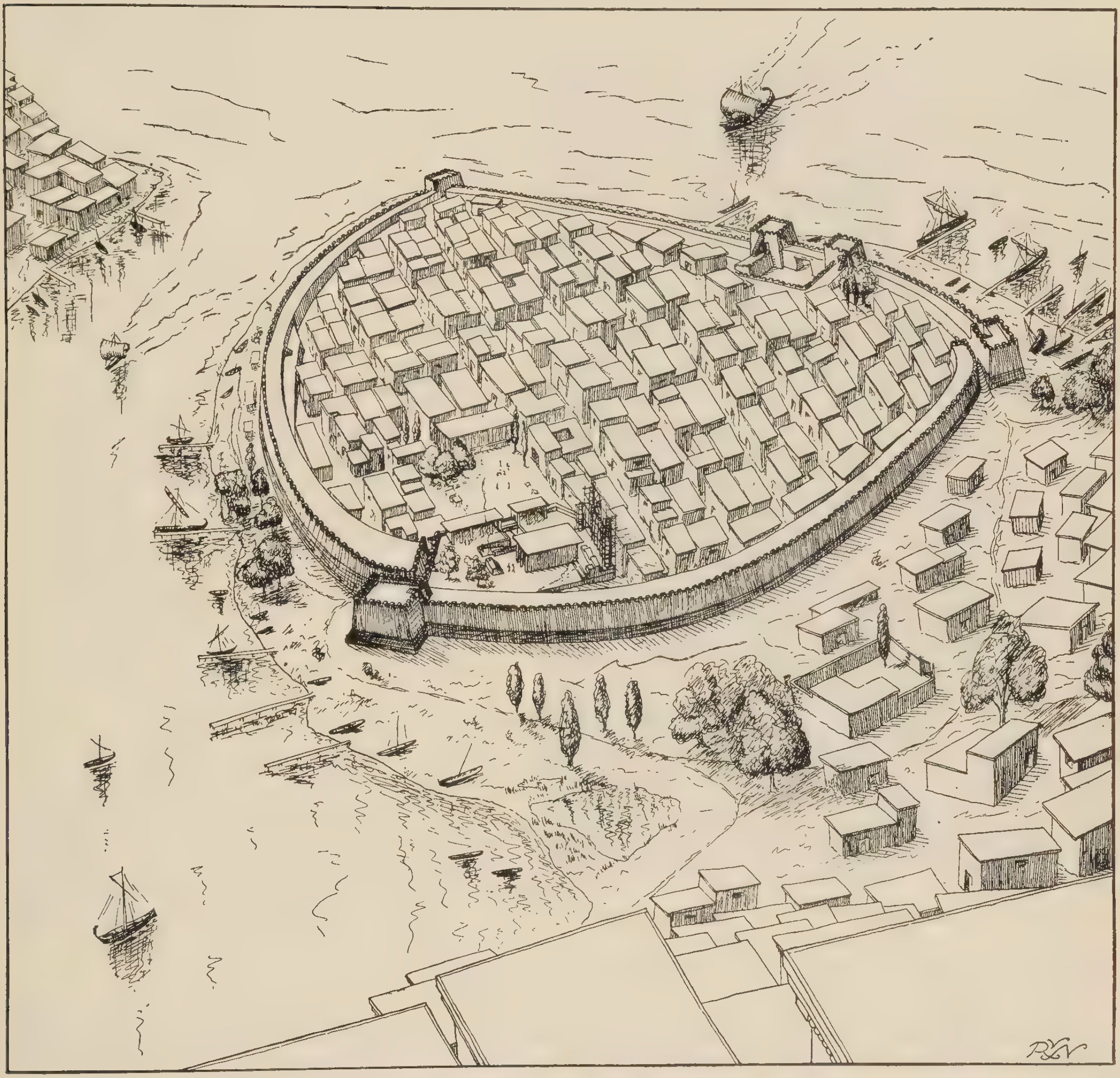


Fig. 3. Old Smyrna from the north-east in the late seventh century B.C. (an imaginative reconstruction)

coinciding with the greater spaciousness within the old peninsula site, indicates a planned development of the city and improvement in living conditions. A much higher standard of masonry in public and private buildings also becomes evident at this time. The improvement was maintained in the course of the seventh century, as is shown by the commodious well-built blocks of houses and the southern extensions of the sanctuary, by the import of white tufa from more distant quarries for the late seventh-century remodelling of the sanctuary, and by richer dedications at the temple and objects of domestic use. It seems to have been in the second half of the century that ample painted terracotta baths were introduced as part of the normal domestic installations (PLATE 6*c*)[27a]. Within these limits the citizen population seems as a whole to have enjoyed a uniformly high standard of living, as apparently did also that of early Colophon.[28] To pursue the analogy of the Homeric description of the migration city of the Phaeacians, the agora may have been by the isthmus, and *temene* of the deities may have lain on the mainland.[29] During a large part of the seventh century the wall circuit on the peninsula seems to have been in ruinous condition. Only in the late years of the century was a stronger and more handsome circuit constructed; the traces of a shallow stairway, apparently of this time, in Square Kvii may possibly mark a stepped way leading from the isthmus to a gate in the circuit. Mr. Nicholls's drawing FIG. 3, which is intended to be more accurate from a topographical than from an architectural point of view, gives an impression of the city as we conceive it to have appeared in the late seventh century.

---

[27] Comminuted potsherds, badly worn, but apparently covering approximately the whole range of the seventh century, have been picked up on the east part of the Bayraklı hill-side, and were recovered in considerable quantity

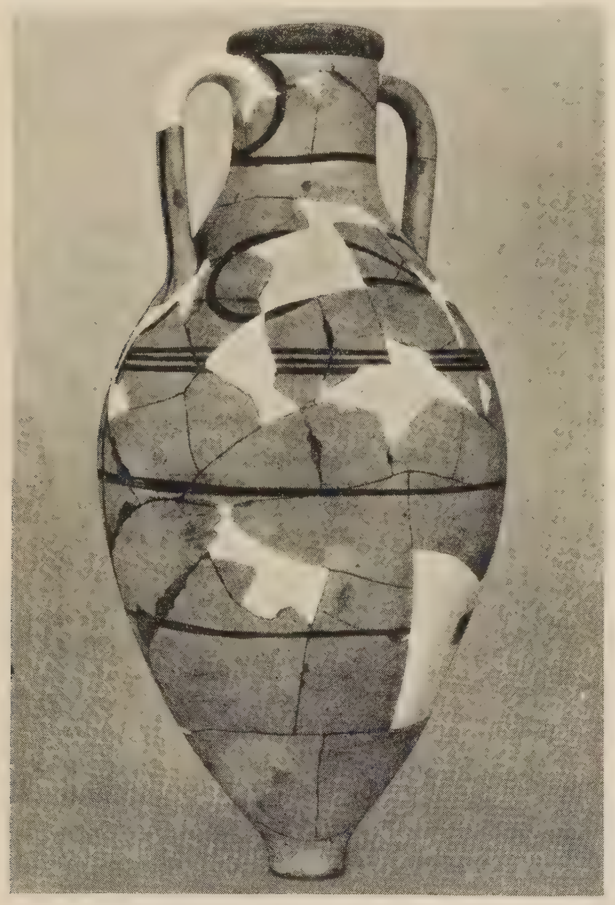


FIG. 4. LATE SEVENTH-CENTURY CHIAN WINE-JAR

Smyrna founded no colonies and there is no record of Smyrnaean maritime activity; the signature, painted on a vase found in the temenos, of a seventh-century potter called Istrokles implies a connexion with the Pontus in the middle years of the seventh century, but the vase is likely to have been made in some other Ionic city. Smyrna was probably, like Colophon, more

---

at the foot of the mountain slope on the north during house-building operations in 1952; seventh-century pottery, including fine pieces of the late years of the century, was found in the sinking of two wells about 500 metres to the south-east of the peninsula site in 1951–2. See the plan, PLATE 1, and drawing, FIG. 3.

[27a] See my article on Greek bathtubs in *Greece and Rome* 1959.

[28] Arist. *Pol.* 1290*b*.

[29] The festival of Dionysus was held outside the city, in Aeolic times at least (Hdt. i. 150). There may also have been cults of the Nemeseis at the Pagos (Paus. vii. 5, 2), which became the acropolis of Alexander's new foundation, and of Artemis at Halka Pınar on the north-eastern outskirts of the modern city (p. 31).

concerned with agriculture than commerce. Nevertheless, the import of luxury articles included products of Rhodes and the Levant; and Corinthian pottery was in common use. A Chian standard wine-jar of the late seventh century is shown here (FIG. 4 and p. 48). The use of writing, rare at the beginning of the seventh century, seems to have been widespread (though not yet used for public purposes) in the second half of the century before the destruction of the city and to have been applied occasionally to the Lydian as well as the Greek language in Smyrna. It is worth remark that coined money does not seem to have been in use at this time, and large-scale stone sculpture had hardly made its appearance. The architectural advances of the later seventh century are best illustrated in the remodelling of the temenos, which will be discussed in a later report. The entry, on the south, was by a roofed pylon whose doorway was marked by a play of three colours in the stonework; this was flanked by bastions, on which apparently stood stoas with a columnar façade facing the temple. The masonry of the entrance-way shows finely jointed polygonal equal to any hitherto known. A stepped incline led up to the temple podium, whose revetment here is faced with perfectly fitted ashlar masonry in which each course is lightly curved in harmony with the incline (PLATE 3*c*). The new, unfinished temple was designed with massive stone columns. The surviving fragments of the great capitals show handsomely carved frond and lotus designs of a complexity unique in Greek architecture, and seem to represent a fluid stage, hitherto unsuspected, which preceded the crystallization of the known East Greek capital forms. Among outdoor pursuits, fishing and hunting seem to be represented by appropriate instruments among the small finds from the excavations. A Smyrnaean, Onomastus, is also named as the first victor in the boxing contest at Olympia in the twenty-third Olympiad (688 B.C.).[30] The use of dice is attested by finds of the seventh century, and the fondness for music by a lifelike portrait of the new seven-stringed lyre painted on a subgeometric dinos—contemporary no doubt with Terpander in the first half of the seventh century, and, I believe, the first Greek heptachord since Minoan times.[31]

THE SMYRNAEAN TERRITORY

The heart of the Smyrnaean territory was the fertile plain whose west limit is defined by the positions of the old and new cities above (pp. 3 f.). The only known inhabited site in this area, apart from the old city, is that on the dominant hill of Bel Kahve (p. 4) above the east end of the plain. The presumed extent of the fortified area there and its independent position commanding the road from Smyrna into the south-west corner of the Lydian plain led Ramsay at one time to consider the settlement a city in its own right; and he elaborated this view by suggesting that the main site of the city at Smyrna had been transferred to this position in archaic times.[32] R. Kiepert, followed by Philippson, assumed Bel Kahve to be the site of one of the unlocated Aeolic towns mentioned by Herodotus,[33] and marked it as Aegiroessa. This assumption is not an impossible one; but since the site appears from surface finds to have been occupied in a small way during classical as well as archaic times and inscriptions found there show that it was

[30] Paus. v. 8, 7; Euseb. *Chron.* Ol. 23.

[31] *JHS* lxxi. 248, fig. 8. Friis Johansen has now published a Rhodian kotyle, probably rather earlier in date, with a portrait of a lyre showing five strings (*Exochi* 122, 33 fig. 57); I have assumed that the Delos sherd with a lyre-playing scene (*AM* lvii, pl. 5.5.) is of a later date.

[32] *JHS* i. 67 f.

[33] i. 149. The names Killa, Notion, and Aigiroessa come after Temnos and before Pitane in Herodotus' list; in so far as Herodotus' order is significant they should have been situated in the eastern or northern parts of what he treats as the Aeolis. Aigiroessa is not otherwise known (unless possibly the fourth-century coins of the Lesbian region with legend ΑΙΓΙ, *BMC Troas* p. lxxvii, are to be attributed to it), nor (if they are distinct from the towns which bear these names but lie outside the limits of the S. Aeolis) are Killa and Notion either.

garrisoned from Smyrna in the Hellenistic era,[34] it is perhaps more natural to regard it as being throughout a village and outpost of the Smyrnaeans. This fortified position would ensure the control of the entry to the plain of Smyrna from the east. To the south lay the great city of Colophon, whose territory probably extended northwards to within sight of the Gulf of Smyrna. The long coastal strip on the south side of the gulf can be reckoned as Clazomenian, if the Baths of Agamemnon, which were said by the younger Philostratus to be about 40 stades from Smyrna and are presumably to be identified with the modern spa of Balçova (p. 4), are those referred to by Pausanias as belonging to the Clazomenians.[35]

The northern boundary of the territory of early Ionic Smyrna can only be conjectured. The ancient villages situated in the heart of the Yamanlar Dağı—the Mormondas, Helos, and Sykaminos (or -non), which are known from late Roman boundary stones[36]—were no doubt Smyrnaean; and probably the old Ionic city of Smyrna owned the mountain country south of the ridge here. But it is questionable whether the northern slopes of the mountain above the Hermus belonged to Smyrna in early times. The two communities named on a classical boundary marker here (Herakleotai and Melanpagitai) were claimed by Ramsay, their discoverer, as two of the numerous forgotten 'cities' founded by the Cymaeans in the Southern Aeolis;[37] but their status is altogether uncertain. Beyond the Hermus here stood the old Aeolic city of Temnos, whose situation is not in doubt.

The alluvial land on the west of the Yamanlar Dağı, which now forms a broad tongue almost sealing off the inner gulf, cannot have been extensive in antiquity; the Hermus discharged westward toward the Phocaean peninsula, and Leukai (now incorporated in the plain) was on a promontory and still remembered (or recognized) as having once been an island. The fairway for shipping approaching Smyrna will therefore have been a broader one in ancient times. Entry was no doubt then, as now, easy in the daytime with a stiff sea breeze; to leave the Gulf of Smyrna is not so easy, though sailing ships may have the benefit of a light land wind after midnight; and it was no doubt because of the difficulties of the long sail down the Gulf that the early Ionic city of Smyrna did not have a commerce comparable to that of Phocaea or the neighbouring city of Clazomenae. By land there is no serious obstacle to communications with Clazomenae and the Colophonian plain.

The ancient road to Sardis led over the pass of Bel Kahve and under the fortress of Nymphaion;[38] its course on the south side of the plain of Smyrna in later Greek times is marked by milestones and the remains of buildings noted by Ramsay and Sayce,[39] but it is probable that in archaic times the road ran along the north side of the plain past Bornova. The traces of a mountain road, perhaps leading north from Old Smyrna to the crossing of the Hermus, have already been remarked (above, p. 7). Ramsay assumed that the ancient road from Smyrna to Cyme and Pergamon kept round the west end of the Yamanlar Dağı—a route that presents no difficulties at the present day and is used by the modern road and railway. It is not, however, certain that the southerly part of this route was so easy in ancient times before this part of the gulf was silted up by the Hermus, or that the river could be regularly forded below the point where the bed ceases to be shingly (at Emiralem) on a line due north from Old Smyrna. The description of Homer's journey from Smyrna in the Herodotean Life, where the poet is said to have gone by way of the Hermus plain to Neon Teikhos,[40] implies the use of the westerly route; but the indications in the Peutinger Table, which shows the main road as going by way of Temnos, seem rather to fit the mountain route.[41]

---

[34] See Seylaz-Keil, *ÖJh* xxviii Beibl. 121 f. (from the village below); Bean, *Jahrbuch für Kleinasiatische Forschung* iii. 45.

[35] Κλαζομενίοις δὲ λουτρά ἐστιν· ἐν δὲ αὐτοῖς Ἀγαμέμνων ἔχει τιμάς (Paus. vii. 5, 12). πηγαὶ θερμαὶ ἐν Ἰωνίᾳ, ἃς ἔτι καὶ νῦν Ἀγαμεμνονείους καλοῦσιν οἱ Σμύρναν οἰκοῦντες· ἀπέχουσι δὲ, οἶμαι, τετταράκοντα στάδια τοῦ ἄστεος (Philostratus *Her.* 691). Cf. also Keil, *ÖJh* xxiii. 86 f. There is in fact another spa (the Urla İçmeleri) west of Clazomenae at the head of the gulf of Hypokremnos, to which Pausanias might be thought to be alluding; and it is notable that Aelius Aristides seems to mention the cult of Asclepius, but not of Agamemnon, in speaking of the baths near Smyrna; cf. Cadoux, *Ancient Smyrna* 17. It is therefore just possible that the title 'Agamemnonian' may have been assumed at the baths near Smyrna after the time of Pausanias and Aristides. But there is nothing inherently improbable in Clazomenian possession of the long coastal strip. The only point where the mountains descend to the shore so as to interpose a barrier between the plains of Smyrna and Clazomenae is east of Balçova on the western edge of the modern city of Smyrna. The old city of Smyrna lay some miles away from here; and if they were not already in possession of this riviera, the Clazomenians might well have advanced their frontier with Lydia to this point after repelling Alyattes.

[36] Bean, *Jahrbuch für kleinasiatische Forschung* iii. 51 f., where the situation of the Mormondas is fixed with some probability; cf. Kondoleon, *AM* xiv. 93, xv. 337, Fontrier, *BCH* xvi. 397.

[37] Ramsay, *JHS* ii. 296 ff. Cf. Keil, *ÖJh* xvi Beibl. 163 ff., Robert, *Études anatoliennes* 115. Keil conjecturally identifies Melampagos as the site at Gökkaya. Robert considers this Herakleia to be the one whose territory was ravaged by Prusias in his war with Attalus II, and that it was an independent city in 155 B.C.

[38] Cf. Keil and Premerstein, *Denkschr. Akad. Wien* lvii (1915) 6 ff. On the hill now occupied by the ruins of the great Byzantine fortress there are traces of an ancient citadel and outer circuit, apparently of equally great extent; some scraps of black glaze pottery picked up on the surface here go back at least to the third quarter of the fourth century B.C.

POPULATION

The population of the city in the late seventh century cannot be directly calculated, since the extent and density of the extramural habitation has not been ascertained. But if the expansion of the city in the early seventh century is to be regarded as a measure of relief from congestion on the peninsula at the end of the eighth century, a rough estimate of the number of houses of this time can be obtained. Conditions in the later eighth-century levels in Squares F–Gxi–xii and in the smaller trench in Square Jxviii–xix suggest that the building plots were at that time closely packed and that there might have been as many as 475 homes within the city circuit; allowing a small amount of space for public requirements and possibly for a larger residence, a conjectural estimate of 450 households is offered. This figure should represent approximately the number of households in the town at the close of the eighth century, though not necessarily the total of citizen families, since farmers with distant holdings may have preferred to live near them.[42] In addition there were probably descendants of the suppressed pre-hellenic population, such as has been postulated in other parts of Ionia,[43] working on the land. The number of households contained within the old circuit in the second half of the seventh century was undoubtedly much smaller. The commodious houses of this time, with several rooms on the ground floor, required a larger plot. If the whole of the peninsula site had been given up to houses it might provide space for 250 homes; but with the presence of a substantial temenos and the suggestion of free spaces (as in the south part of the big trench in Squares F–Gxii) it is questionable whether more than 200 such houses can be reckoned with. In view of the probable increase in the population in the seventh century, it may be conjectured that more than half of the urban population was then living outside the limits of the peninsula city. The figure here suggested for the number of families resident in the city in early archaic times may be contrasted with Xenophanes' picture of not less than a thousand well-groomed men passing the time of day in the agora of the great city of Colophon.[44] It cannot easily be controlled by archaeological evidence from other sites in Ionia and the Southern Aeolis. Considerably smaller peninsula sites with evidence of prehistoric and early Greek habitation are Gryneion[45] in the Southern Aeolis and a site, probably ancient Pygela, just west of Kuşadası (Scalanova);[46] the latter, to judge by the exposed strata, seems first to have spread across its isthmus in the fifth century B.C. On the site identified by Ramsay as Larisa, and excavated as such, the area of later archaic settlement seems about equal to that of the peninsula site of Smyrna.[47] There is therefore ground for

---

[39] *JHS* i. 63, 86; ii. 52. Herodotus' mention of the τύποι of Sesostris in connexion with the route from Sardis to Smyrna (ii. 106) proves that in the fifth century the road ran over the pass of Bel Kahve; for not only were the reliefs discovered in the Karabel a little way south of this road (cf. Cadoux, *Ancient Smyrna* 33 ff.), but the less direct route leading from Sardis along the north side of the Manisa Dağı to the Hermus gorge would more naturally have been described as leading to Magnesia, or to Phocaea and Cyme. For more recent references, see p. 10 n. 8.

[40] C. 9, πορευόμενος δὲ διὰ τοῦ Ἕρμου πεδίου ἀπικνέεται ἐς Νέον τεῖχος. This seems to imply the possibility of his taking another road.

[41] Cf. *JHS* ii. 286. Ramsay discussed Aelius Aristides' journey from Smyrna to Pergamon at length in *JHS* ii. 44 ff., and used it in building up his system of identifications of ancient sites in the Southern Aeolis. The discovery of a milestone, measured from Ephesus, at Bornova (ibid. 51) perhaps supports the case for a mountain road; the figure (7 or 8 miles) on the milestone said to have come from Menemen (ibid. 52 f.), which has caused serious difficulty, can then be more satisfactorily explained as giving the distance from the main road at the crossing of the Hermus by Emiralem. An incomplete inscription recording repairs under Trajan was found near Ulucak to the south of Menemen (*BCH* xvi. 403 n. 2).

[42] There may also have been a village at Bel Kahve by this time (pp. 4, 17 f.).

[43] The Gergithes of the Milesia may have been serfs (Heracleides *ap.* Athen. 524). The Pedieis mentioned in inscriptions of Priene are, rightly or wrongly, commonly understood in this sense (cf. *RE*, Pedieis (4)); and the πύργοι of Teos were interpreted by Ed. Meyer and Wilamowitz as the seats of a landed aristocracy (Ruge, *RE* s.v. Teos 556, cf. Hunt, *JHS* lxvii. 70 f., 75). At Colophon also a suppressed class is suggested by Mimnermus' boast βίην ὑπέροπλον ἔχοντες ἑζόμεθ' ἀργαλέης ὕβριος ἡγεμόνες (fr. 9 Bergk, 12 Diehl). Wilamowitz' suggestion that the crime of the people of Melia, which occasioned their destruction, was the raising of the native population is more conjectural and hardly fits with Vitruvius' phrase 'propter civium adrogantiam' (*SBBerl.* 1906, 78 = *Kl. Schriften* v. i. 174).

---

[44] Fr. 3 Bergk, 3 Diehl.

[45] Schuchhardt in *Pergamon* i. 1, 98.

[46] Keil, *ÖJh.* xi. Beibl. 146 ff., fig. 97. Cf. *ATL* i. 515 (Marathesion, but admitting the possibility of an identification with Pygela), *JHS* lxxiii. 125. The main strata my wife and I noted on the site are Byzantine (on the beach south-east of the isthmus), classical (on the north at the landward end of the isthmus), Geometric (on the north-east side of the peninsula), and prehistoric (cf. Mellaart, *Anat. Studies* vii. 83) on top of the peninsula. This sequence, taken in conjunction with the classical and medieval literary *testimonia*, leaves no doubt that this site is Pygela, which had an Amazonian tradition and its own foundation-legend, was independent between the time of the Athenian empire and the Hellenistic era, and was evidently a place of some account in Byzantine times. In Pliny, *NH* v. 114 the 'Phygela fuit' of our texts should be corrected to 'Phygela, fuit et Marathesium oppidum' (cf. my remarks on this section of Pliny in *CQ* 1959).

This site deserves attention. Its history is written on its sea-washed banks and could be read in detail with no more equipment than a ladder and pick.

[47] Boehlau-Schefold, *Larisa* i. Whether or not the site is Larisa, its access of prosperity in later archaic times must have been due to the Egyptian mercenaries (presumably of Greek or Greco-Carian origin) settled by Cyrus the Great in the Hermus Plain (Xen. *Cyrop.* vii. i. 45). If not Larisa, this site should be Cyllene.

The identification of Buruncuk with Larisa goes back to Ramsay (see above, p. 19 n. 41). It depends on (*a*) the distance (70 stades) given by Strabo (xiii. 622) as separating Larisa from Cyme, (*b*) the assumption that the Hermus crossing lay south of Menemen (as it did at the time of Ramsay's journey, before the diversion of the river in 1886), and that the road taken by Aelius Aristides led from there across the plain directly to Buruncuk. It is true that (*a*) favours the identification with Buruncuk, but it is not cogent since Strabo's distances on this coast are habitually underestimated. But (*b*) depends on the view, which is almost certainly false, that the Hermus in antiquity flowed in its pre-1886 bed (southward from Menemen) and that it was forded in the Hermus plain near the modern Ulucak (see above, p. 19); in fact the 'new' 1886 bed seems to have been an older one (cf. von Diest, *Pet. Mitt.*, Erg. 94 (1889) 35); in all probability it was the ancient one.

The objections to placing Larisa at Buruncuk are (i) that if the Hermus ford (as I suppose it to have been) was at Emiralem, the Yanıkköy site (commonly called 'Neon Teichos') would fit better with Aristides' data for Larisa—and conversely, if the ford was in the plain in the vicinity of the modern girder bridge, the Buruncuk site would be too near to the ford; (ii) I think that the surface archaeological evidence suggests that at the beginning of the fourth century B.C.—the time when Thibron spent much time in unsuccessfully besieging Larisa—the most powerful and extensive site in the Hermus plain was not that at Buruncuk, but that at Yanıkköy; (iii) if the site at Buruncuk, which dominates the passage from Cyme sleeve into the Hermus plain, was that of Larisa (which was evidently a place of some consequence in the early fourth century B.C.), it seems extraordinary that it was Cyme (and not Larisa) that disputed with Clazomenae the possession of Leucae near the Hermus mouth after Tachos' death *c.* 382 B.C. (Diod. xv. 18; cf. Judeich, *Kleinas. Studien* 191); (iv) in the *Vita Herodotea*, which is evidently written by a person familiar with the S. Aeolis, the blind Homer is made to walk from Neon Teichos to Cyme διὰ Λαρίσης /τὴν πορείαν ποιησάμενος· ἦν γὰρ οὕτως αὐτῷ εὐπορώτατον (c. 11): this clearly implies that for a traveller who was not blind there was a recognized alternative route; but from Yanıkköy the way to Cyme must inevitably lead past Buruncuk, and it would be absurd to think of an alternative route; (v) Larisa is recorded as one of the original Aeolic foundations on this coast, but despite extensive excavation the Buruncuk site has yielded no early Greek deposit (see above, p. 11 n. 11).

These arguments are of unequal value, but (iv) and (v) seem to me cogent. If the coins could be used as evidence that this Larisa remained independent in the fourth century B.C., (iii) would be equally cogent; and it could also be objected that if Buruncuk is Larisa, it is extraordinary that fourth-century coins of Larisa did not come to light in the excavations there. But since the publication of *Larisa* iii I have been very dubious whether this Larisa (the Phrikonid one) can ever have struck coins; and, exhaustive considering that early Smyrna had a distinctly larger urban population than any of these. Other inland Aeolic cities such as Temnos and that identified by Ramsay as Neon Teikhos (Yanikköy), where only the small fortified citadels permit measurement, do not provide comparative evidence; the latter, which could well be Larisa, was equipped, probably (to judge by the pottery on the ground) in the late fifth century B.C., with an extensive wall circuit, but the density of habitation inside it is unknown.[48] Only at Cyme does the crest that bears archaic settlement seem to be considerably larger than the peninsula site at Smyrna.[49]

Among the larger Ionic cities there is none whose limits and density of habitation in early times are sufficiently clear to allow a comparison with Smyrna,[50] unless we may take into account a nameless site in the Erythraea, which lies on the south side of the Gulf of Erythrae about 2 kilometres west of the spa of Ilıca (Çeşme). This site, situated on a thin peninsula,[51] is strewn with potsherds ranging from Geometric to the early fourth century and shows traces of a cult of a goddess on the highest point. In view of the apparent absence of relics of habitation (though not of worked or inscribed stones) prior to the mid-fourth century on the known site of Erythrae at Ildır, and the close resemblance that the situation at Ildır bears to that of fourth-century and Hellenistic foundations like New Smyrna, Lysimachian Ephesus, and New Cnidus, it seems probable that the peninsula site near Ilıca may be that of the archaic and classical city of Erythrae.[52] The peninsula is well over a kilometre long and at a rough estimate offers four times the area of the peninsula site of Old Smyrna, but the seaward end of this—amounting to about one-third of the whole—appears never to have been occupied; supposing therefore no necessity for the settlement to have been congested, it is not likely that its population was more

---

though it is, L. Robert's recent discussion in his *Études de numismatique grecque* 36–68 does not convince me that the bull coins of Larisa are to be assigned to the Phrikonid Larisa. In 1902 Boehlau, who was then excavating Buruncuk, seems to have noted a peculiar bronze coin of this series, but it is significant that that most conscientious of archaeologists did not enter it among the finds from the excavations (cf. *Ét. num. gr.* 66; it is tempting to suggest that what Boehlau jotted in his note-book was a coin shown him by a dealer). Otherwise the identification of this series rests solely on the assumption that the almost identical bull coins with legend Βοιωνιτικόν are to be attributed to an otherwise unknown city (universally called 'Boeone') in the S. Aeolis; and this assumption rests on a report that coins of this place were found in the Hermus valley (westward toward Cyme? or eastward towards Sardis?); cf. *Ét. num. gr.* 49 f., with references. This evidence is difficult to assess. Against it must be set the general improbability that there was an independent city of this name in the S. Aeolis near Larisa in the fourth century (for we know the names of all the old Aeolic cities here and have a considerable range of other *testimonia* for the region) and the fact that no coins of this 'Boeone' came to light in the excavations at Buruncuk; though not decisive (as the analogy of the Tisnaean coin shows), this objection is weighty. It is worth recalling that in later times there were two κατοικίαι close to one another in the Cayster valley up-country from Ephesus: the well-known Ephesian Larisa (at Güzelim Tepe) and the Βωνῖται (at Büyük Kadife, Keil and Premerstein, *Dritte Reise* 99 ff., cf. L. Robert, *Études anatoliennes* 102 n. 6; Robert draws a comparison with the name Βωνιτῶ in the cadastral survey of Magnesia ad Maeandrum, *Inschr. v. Magn.* no. 122 *e*, l. 11; cf. also *Rev. Phil.* 1958, 55 n. 2). Perhaps, pending more precise evidence of finds, it might be as well to consider these two places as alternative sources of the bull issues, and not to base any arguments on the existence of a fourth-century coinage of Larisa Phrikonis.

[48] Schuchhardt in *Pergamon* i. 1, 103 f.

[49] Unfortunately there is no indication at Cyme of the distance to which the crest was occupied in the inland direction.

[50] Miletus, Clazomenae (mainland site, *AE* 1953–4, 152 f.), and Phocaea were certainly capable of a considerably greater extent, and the limits of Polycrates' city of Samos were much greater (*AM* ix, pl. 7). On the other hand Eresos and the proasteion of Pyrrha in Lesbos (Koldewey, *Antike Bauresten der I. Lesbos* 22 ff., 27 ff.) give the appearance of being no larger, even in classical times, than the peninsula site of Smyrna, while the towns of the Lelegian octapolis (*BSA* l. 116 ff.) were distinctly smaller.

[51] Named by Lady Beazley (who with her husband discovered the site) 'Donkey Point' on account of the profusion of skeletons of donkeys there; on the Turkish maps 'Kalem Burun'.

[52] This problem, being more complicated than that of Larisa Phrikonis, would require a more detailed argument than is in place here; but I take this opportunity of drawing attention to a known inscription of Erythrae which appears to be an ordinance regulating the laying-out in the mid-fourth century of a new system of public streets and lanes and should therefore relate to a new foundation or the complete remodelling of an old one (Smyrna Mus. no. 1032, said to have been found at the Agora of Smyrna, but in fact previously published as found at Ildir, *BCH* viii. 346 ff.; Bechtel, *Ion. Inschr.* pl. 4/5; *SGDI* 5690; Wilamowitz, *Nordion. Steine* 28 f.).

than double that of Old Smyrna, that is to say—even in classical times— not more than 1,000 urban households. The territory of the Erythraeans was, of course, much more extensive than that of Smyrna, and it included five townships which were separately assessed in the Athenian tribute lists.[53] So the total number of Greek households on Erythraean soil is likely to have been much greater. But if the identification of this site is correct, it appears from comparisons on the ground that Smyrna was a city of moderate size, being considerably greater than the smaller Aeolic cities and second-rate Ionic settlements, but inferior to Cyme and the big Ionic cities. A considerable part of the Smyrnaean land was within easy reach of the old city; and it is doubtful, in view of the lack of archaic habitation traces save at Bel Kahve, whether more than half of the citizen population would have resided on the land. Thus the entire Greek population of Smyrna in the seventh century probably did not greatly exceed a thousand households. The Erythraeans (as also the Colophonians), in whose more extensive territory there was no doubt a much higher proportion of country dwellers, may well have been three or four times as numerous. To round off this highly speculative calculation and place Old Smyrna in its wider perspective, the total free Greek population of mainland Ionia in the seventh century B.C. might on these lines be reckoned at about 35,000 families or 200,000 men, women, and children. The assumption that by the exploitation of a subject native population on the land the Greeks of Ionia were able to enjoy a more leisurely and comfortable existence than those of the Greek homelands would account equally for their numerical weakness remarked by Herodotus[54] and the disproportionately great contributions which they were in a position to make to early Greek literature, thought, and culture.[55]

HOMER

Without question the most famous citizen of Ionic Smyrna was Homer. No point in the ancient traditions of his life story is so firmly attested as his Smyrnaean origin.[56] Elements at least of the biographical accounts contained in the Lives of Homer seem to have been known to Ephorus, Aristotle, and the author of Scylax' *Periplus* in the fourth century, and to Pherecydes, Hellanicus, Damastes, and Critias in the fifth; Pindar also spoke of Homer as both a Chian and a Smyrnaean, as though he were aware of the tradition that he was born in the one city and made a home for himself in the other. Since in the sixth and fifth centuries B.C. Smyrna was not a Greek city and can hardly have been in a position to voice her claim against that of Chios, the persistence of the Smyrnaean connexion carries conviction. The frequent mention in the *Iliad* of natural features of Lydia and mountains behind Smyrna would accord with a particularly intimate acquaintance with the interior of the Hermeian Gulf. But the most significant testimony to the Smyrnaean connexion is the prominent Colophonian claim to Homer. This is not supported, as distinct from that of Smyrna, by any biographical tradition; and like the Colophonian claim to Mimnermus it seems to depend on the Colophonian ancestry and connexions of the Ionians of Smyrna; but it is reinforced by the strength and long duration of the tradition of epic poetry in Colophon.

---

[53] *ATL* i. 446 f., 486.

[54] i. 143, ἀσθενέος δὲ ἐόντος τοῦ παντὸς τότε Ἑλληνικοῦ γένεος πολλῷ δὴ ἦν ἀσθενέστατον τῶν ἐθνέων τὸ Ἰωνικόν.

[55] Roebuck (*CP* 1953, 12) has recently made an acute attempt to calculate the free population of some Ionic states at the beginning of the fifth century on a basis of the muster of triremes at Lade, and suggests Chios *c.* 80,000, Miletus *c.* 64,000, Samos *c.* 48,000, as also Lesbos *c.* 56,000; if extended to other mainland Ionic cities this reasoning would give Myous *c.* 2,400, Priene *c.* 9,600, Teos *c.* 13,600, Erythrae *c.* 6,400, Phocaea *c.* 2,400. Ephesus, Colophon, Lebedus and Clazomenae (the last-named already overrun by the Persians) are not included in the list. These figures are naturally defective in that cities with no maritime tradition are underestimated—Erythrae, for instance, must have had a much bigger population; the Athenian tribute lists, on a basis of perhaps 3,000–3,500 people per talent, offer a useful countercheck. But the total figure for the Ionic muster may well be an accurate guide within its geographical limits; Erythraeans and Phocaeans, for instance, may have helped to man the Chian fleet. Assuming that Colophon and Ephesus had by this time been outstripped by Miletus, the total free Greek population of mainland Ionia in 494 B.C. might be reckoned, in accordance with Roebuck's reasoning, at around a quarter of a million—a figure that would not be out of keeping with that of 200,000 in the seventh century.

[56] Cf. Cadoux, *Ancient Smyrna* 73, 209 ff.

The appearance of the eighth-century city on the peninsula, so far as it has been revealed by excavation, seems unworthy of the description of cities and material conditions in the Odyssey; and this would be better satisfied by the more spacious residences and fine masonry of the seventh century and the temple with its ἀγάλματα πολλὰ καὶ ἐσθλά. But on general grounds so late a date for Homer is hardly tenable; it must be recalled that Smyrna was not one of the largest or most commercially advanced Ionic cities and that the better conditions seen in Smyrna in the seventh century might reflect earlier developments in greater coastal cities of Ionia. The natural feature with which Homer was constantly associated in antiquity was the River Meles.[57] The association is reported to have the authority of Ephorus and Aristotle, and the river itself, apparently in the form Μέλητος, was mentioned by Hecataeus as having given its name to the gulf or bay. Later romance has the severed head of Orpheus fished up near the river mouth.[58] It seems clear that in later times, when the cult of Homer was established, the river Meles was pointed out near the new city, and most probably at the pools now called Halka Pınar outside the city on the north-east. In the shorter Homeric Hymn to Artemis the goddess is portrayed as watering her horses at the Meles and then driving through Smyrna on her way to the Colophonian sanctuary of Apollo at Claros.[59] If it could be shown that this hymn was composed before the foundation of New Smyrna in the second half of the fourth century, it would be necessary to place the original river Meles in the vicinity of the old city,[60] and in fact to equate it with the stream that issues from the gravefield and is marked as 'River Meles' on our plan PLATE 1; it could then be assumed that Artemis was envisaged as descending from the north by the carriage road which led past the rock pools referred to above (p. 7) to the coast alongside the old city. But the testimony of the Clarian hymn is the only one that could be said to place the river Meles close to Old Smyrna; and if it can be considered to be of Hellenistic date—as seems not improbable in view of the persistence of the tradition of epic poesy at Colophon—the argument for such a location falls to the ground. The oracle quoted by Pausanias, in which Clarian Apollo gave his blessing to the project of removing the city to Alexander's new site at the Pagos, refers to the new site as being 'on the other side of sacred Meles';[61] and this phrase suggests, and indeed requires, a position farther from Old Smyrna than the stream that flows through the gravefield. The stream and pools at Halka Pınar would fit well with the ancient descriptions of the Meles; the modern name 'Baths of Diana' applied to the waters here appears also to be supported by discoveries associating the place with a cult of Artemis, and there may have been a cult there in late archaic times (see p. 31). It seems therefore probable that even in archaic times the stream at Halka Pınar was named Meles and distinguished by a cult of Artemis.

THE LYDIAN CAPTURE

The old Ionic city of Smyrna seems to have been at the height of its prosperity in the late seventh century. As a residential city it seems to have been well laid out and dignified in its appearance. Following on successive extensions of the temple platform and temenos and the construction of a handsome entrance pylon, a new temple with a superstructure of white tufa seems to have been under construction; and large column drums and elaborately carved capitals of the same material are associated with this phase. The third and strongest of the successive archaic fortifications of the peninsula seems also to have been completed about this time, perhaps in expectation of a Lydian attack. The attack was delivered, and Smyrna fell. Herodotus' brief statement that the Lydian king, Alyattes, Σμύρνην τὴν ἀπὸ Κολοφῶνος κτισθεῖσαν εἷλε[62] is illuminated by the discoveries made in the course of excavation. It is not clear to what extent the buildings of the peninsula city were destroyed in the course of the operations; in some cases the actual collapse or demolition can be shown to have occurred somewhat later. The houses, of course, having little wood in their construction, would not burn readily. Much fine pottery was smashed or abandoned in the houses at the time of the capture. Numerous spearheads and about 125 bronze arrowheads (both leaf-shaped and of the triangular 'Scythian' form, PLATE 6*d*) have been found in the level associated with the destruction. Some of the arrowheads were found embedded in mud brick from the walls of houses. A considerable cache of weapons, including many iron spearheads and an iron helmet of oriental type, came to light in the excavation of the Temple Pylon; architectural fragments in white tufa were found alongside the weapons, and they may be regarded as debris which fell or was thrown down into the Pylon in the sixth century from ruined constructions on the terrace above.[63] The arrowheads seem to be commonest in the north part of the site, and it was no doubt mainly at this end that the battle raged. No skeletons, however, or human bones were found in this stratum.

---

[57] This topic is discussed, with a bibliography, by Cadoux, *Ancient Smyrna* 10 ff.

[58] Conon *ap.* Phot. *Bibl.*, Jacoby *FGH* 26, F1, p. 207.

[59] *Hymn. Hom.* ix. 3–5.

[60] As Prokesch and others have done, cf. Cadoux, op. cit. 13.

[61] Paus. vii. 5, 3, οἳ Πάγον οἰκήσουσι πέρην ἱεροῖο Μέλητος (evidently as seen from Old Smyrna, not from Claros).

The most remarkable relic of the assault is the high knoll forming the north-west corner of the site, which since the time of the capture has been the dominant feature of the *tell* on which the old city stood. The present circular crown (Squares G–Hix), surrounded by a terrace wall and shaded by two large trees, stands over 21 metres above sea-level and offers a wide prospect of the site and the surrounding plain. It is seen from the west in PLATE 6*a*. The Miltners excavated in ancient debris to a depth of nearly 7 metres here,[64] and in our excavations in 1948–9 the central part of this knoll was tested as deep down as 5·90 m. above sea-level. In spite of the great depth to which the excavation was carried the original ground level was not reached, and it is clear that this elevated point of the hill is in fact an artificial mound rising high above the ancient ground level of the city (which in the late seventh century stood not much more than 10 metres above the present sea-level in this sector). This mound is formed of loose debris consisting of stones, chunks of mud brick, and earth containing abundant fragments of comminuted seventh-century pottery. The pottery consists of Subgeometric, and Orientalizing and cognate wares, with scraps of Corinthian vases (many coming from small Protocorinthian kotylai of *c.* 700 B.C. or the early seventh century); from the present-day surface downwards it forms a pure deposit, whose lower chronological limit is identical with that of the pottery from the destruction levels on the site, and which seems to cover the full range of the seventh century. It must therefore represent debris of seventh-century habitation. The slight indications of the course of the city wall and the contours of the ground in this area suggest that this mound lies outside the line of the seventh-century circuit; and the debris of which the mound is formed seems therefore to have come from the extramural habitation, which (as has been remarked above, pp. 15 f.) seems to have commenced about the beginning of the seventh century.

So gigantic a mound, raised from the low ground to overtop the city fortifications, can only be explained as a siegework; and on chronological grounds therefore it can with certainty be attributed to Alyattes. At a low level in the mound (about 8 metres above sea-level) a large mass of solid mud brick was encountered in our excavation; this may possibly have fallen from a breach effected in the superstructure of the city wall. At higher levels in the mound layers of burnt or carbonized wood and blackening were noted sloping down from north to south; and impressions of beams and branches show that timber was embedded in the construction. The evidence of the layers of blackening suggests that the mound was piled up to a crown more than 12 metres out from the wall face; this will have provided a platform sufficiently far from the battlements to be vulnerable only to bowfire, against which screens could be erected, and will have enabled the attackers to give close-range covering fire while the intervening space was being filled in. Many arrowheads were recovered from this cut in the mound; since only four of these were of the triangular type as against thirty-one of the leaf shape, the assumption is that the defenders were using leaf-shaped ones. In view of the great height to which the mound rises, it is hardly possible to doubt that it was at this point that the Lydians eventually effected an entrance into the city. The defenders no doubt attempted to counter the siege-mound by building up their own fortification wall to a greater height at this point; and the siege must have been a protracted one. It has been claimed by modern historians that the Lydians, in contrast to the Assyrians and Persians, did not make siege mounds; but it now becomes clear that they did, and indeed such an operation would have come naturally to the builders of the gigantic burial tumuli of Sardis.

---

[62] i. 16, 2.

[63] *JHS* lxxii. 107, fig. 12.

[64] *ÖJh* xxvii. Beibl. 167 f.

After the capture of Smyrna, Alyattes proceeded against Clazomenae; but there he appears to have suffered a serious reverse.[65] Wilamowitz has argued that Alyattes would not have marched against Clazomenae at this stage unless he were master of Colophon; but there is no good reason to suppose that Colophon was in Lydian hands at this time.[66] Indeed it is hard to see how Smyrna could have remained independent throughout the seventh century if Colophon had been subjected. Similarly, it is unlikely that the Colophonians would have stood aside while Smyrna and Clazomenae were attacked, since both these cities seem to have been bound by close ties to Colophon. If Alyattes' attack on Clazomenae was repelled by force of arms, the famous Colophonian cavalry is likely to have played a major part in his defeat; indeed this may have been the classic occasion on which the Colophonians delivered the decisive stroke for which their cavalry was celebrated. The delay caused by the stubborn resistance of the Smyrnaeans, as shown by the height to which the siege mound had to be carried, may have contributed to the failure of Alyattes' offensive.

Date of the Capture

The date of the Lydian conquest of Ionic Smyrna is fixed in the archaeological scale by the very considerable volume of Corinthian pottery found in the destruction level on the site. This level is in general clearly defined; and though it is not everywhere secured against later intrusion, much of the pottery found can be said with certainty to have been in use in the houses or kept in the sanctuary at the time of the Lydian attack. The latest Corinthian pottery in this level, as is demonstrated in the section on Corinthian wares (below, pp. 143 ff.), is of the Early Corinthian phase and shows no sign of the transition to Middle Corinthian. Archaeologically speaking, therefore, the capture of the city occurred definitely before the end of the Early Corinthian phase, which is normally placed *c.* 600 B.C. or not long after.

To turn to the literary evidence, the only positive chronological limits are those of the reign of Alyattes, whose death is fixed *c.* 560 B.C., and whose accession cannot be placed earlier than 618/17.[67] The events of Alyattes' reign are given by Herodotus as follows (i. 16): he fought with

---

[65] Hdt i. 16, 2, προσπταίσας μεγάλως.

[66] *SBBerl.* 1906, 52 = *Kl. Schriften* v. i. 145 n. 2. Wilamowitz' statement that Colophon was conquered by Gyges is questionable, since Herodotus says only that Gyges captured the ἄστυ. Polyaenus (vii. 2, 2) relates a stratagem by which Alyattes, having made an alliance with the Colophonians, overpowered a body of their cavalry; this at least seems to imply that Colophon was not permanently subjected by Gyges. Xenophanes fr. 3 (Bgk) also seems to imply that the Colophonians had until recently been free.

[67] Hdt. i. 25, 1, βασιλεύσας ἔτεα ἑπτὰ καὶ πεντήκοντα. Alternative dates for Alyattes' accession are 609 (Eusebius) and, apparently, 604 (Parian Chronicle).

Cyaxares and the Medes, drove the Cimmerians out of Asia, captured Smyrna, and attacked Clazomenae but sustained a severe reverse. Herodotus then goes on to relate at length the story of the war against Miletus, which Alyattes continued on his father's death for five annual campaigns; in the sixth year he abandoned the war, made peace with the Milesians, and sent offerings to the Greek god at Delphi. Alyattes' campaigns against Miletus are expressly said by Herodotus to have been in direct continuation of his father's;[68] so it is clear that it was for the sake of convenience that the historian left to the end the long story relating to the Milesian war. In his first five seasons Alyattes was occupied with the Milesian war, and he cannot have been free for fresh ventures before 612 B.C. at the earliest. In fact, since the operations against Smyrna and Clazomenae must be interpreted as initial stages in an attempt to get control of the North Ionic cities and as representing an offensive on a similar scale to that against Miletus, Alyattes' action in terminating the Milesian war and making offerings at Delphi, implying a desire to conciliate Greek feeling, is hardly compatible with an immediately ensuing second offensive in Ionia; and so Alyattes is not likely to have attacked Smyrna before the last decade of the seventh century.

It has been supposed that Herodotus mentions the exploits of Alyattes in chronological order when he says that he fought with Cyaxares, expelled the Cimmerians, captured Smyrna, and attacked Clazomenae. Assuming for the moment that this were so, and assuming, as most scholars have done, that the war with the Medes ended with an eclipse of the sun and the eclipse was that of May 585 B.C., the taking of Smyrna would have to be set at a time which conflicts with the archaeological evidence and would entail a drastic revision of the dating of Corinthian pottery. But either or both of the above assumptions may be false. If Herodotus for literary convenience has put the war with Miletus late in the sequence of Alyattes' exploits, he may have done the same with the campaign against Smyrna and Clazomenae, so as to bring together Alyattes' two series of enterprises against the Greek cities. And equally it is not certain that the eclipse that ended the Median war was that of 585 B.C.; for, according to Herodotus' own chronology, Cyaxares was dead some years before that year, and there are other eclipses which might come into question. It is therefore possible either that the campaign against Smyrna preceded the war with the Medes or, if this is not so, that the Median war belongs to the last decade of the seventh century in the years of unrest that followed the fall of Nineveh,[69] so that the years around the turn of the century may have witnessed the attack on Smyrna, the termination of the Median war releasing the Lydian army for a second enterprise against the Ionians. It would therefore be hazardous to interpret the literary evidence in a way which would make it necessary to bring down the lower limit of the Early Corinthian style to a date considerably after 585 B.C.

To revert to the archaeological evidence, recent observations tend to suggest that Payne's limit of *c.* 600 B.C. for the Early Corinthian style could be lowered by as much as ten years.[70] But a lowering of this limit to *c.* 575 B.C. would cause almost insuperable difficulties in the correlation of Corinthian and Attic vase-painting; and further it would involve the rejection of the evidence (derived also from excavation on a considerable scale) from Selinus, together with some other associations with western colonial foundations. Selinus, with its Thucydidean foundation date of *c.* 628 B.C., ought then in its earliest stages to show traces of occupation considerably antecedent to the latest occupation in the old Ionic city of Smyrna; yet between the pottery from the earliest contexts at Selinus and that in the destruction level at Smyrna there is no appreciable overlap: the foundation of the one city and the destruction of the other seem to fall within the same generation.[71] No less decisive, in fact, is the evidence of Ionic and Attic wares from the sixth-century deposits excavated at Old Smyrna itself; these show that the published remnants of pottery from the Tomb of Alyattes himself at Sardis[72] correspond to a stage which at Smyrna is characterized by a developed Black Figure style and separated by a long interval from the Orientalizing style of the destruction level; and consequently the capture of Smyrna cannot be placed in the later part of Alyattes' reign. The negative evidence from the excavations—the absence of any trace of coinage in the levels of this time, and of large-scale stone sculpture and the recognized orders of architecture at the sanctuary—must also weigh heavily against so late a dating. If the Lydo-Median war be dated 590–585 B.C., it is then possible to give a date *c.* 600 B.C. for the capture of Smyrna, with an extreme margin of ten years on either side. If on the other hand the outbreak of the Lydo-Median war is placed in the last decade of the seventh century, the upper terminus for the capture of Smyrna must be lowered almost to 600 B.C.

---

[68] i. 18, 2.

[69] Now dated 612 B.C. by the Nabopolassar Chronicle (Gadd, *The Fall of Nineveh*). Alyattes' eagerness to break off hostilities with Miletus in that year and placate the Greeks on his western frontier would then be explained by a desire to be free to intervene in the east.

[70] As Payne himself recognized (*NC* 57). See Hopper, *BSA* xliv. 169–84; also a new discussion of these problems by Dunbabin in the second memorial volume for Professor Oikonomos (*AE* 1953–4), which by the kindness of the author I have been able to read in advance of the publication.

MIMNERMUS

The menace from Lydia called for preparation and martial exercise. From these times one voice still sounds. Mimnermus' elegiacs have been well compared with 'Elizabethan songs which in a vigorous full-blooded life of action lamented the futility of living and the inevitability of the grave'.[73] His surviving work is distinguished by impetuous exhortation to enjoy the pleasures of life while the season is fresh and by admiration of courage and adventure. His impatience of the disabilities of advancing years, which was adversely criticized by the more contemplative Solon, speaks for times of vigorous action; and the examples that he commends to his hearers are those of unremitting toil, enterprise, and martial ardour, coupled with pride in the bold achievements of their forebears, who by overwhelming might ruled Colophon and conquered Aeolic Smyrna. The forceful, almost violent tone in which the poet describes the achievements of his forebears is most naturally explained not as truculence, but as defiance of those who would dispossess him and his fellow-citizens; and the words with which Strabo introduces the passage (μνησθεὶς τῆς Σμύρνης ὅτι περιμάχητος ἀεί)[74] imply that Mimnermus had other, more recent struggles for Smyrna in mind. These must inevitably be the struggles with the Lydians.

---

[71] In addition to Hopper's and Dunbabin's discussions (n. 70) the problems associated with the Corinthian pottery at Smyrna are considered by Mr. Anderson in the section of this report devoted to the Corinthian pottery (below, p. 148). Comparison of the East Greek pottery from the two sites gives a similar result.

The comparison between the pottery of the destruction level at Smyrna and the earliest pottery from Selinus is now set on a different footing by Vallet and Villard's discovery of unpublished vases from the Malophoros sanctuary (*BCH* lxxxii. 16 ff.). Vallet and Villard publish some fine Corinthian Transitional pieces, and some smaller vases which they consider of Late Protocorinthian date. On this evidence Payne's dating of Corinthian Transitional to 640–625 (and Early Corinthian 625–600) hardly agrees with the Thucydidean date of 629/8 for the foundation of Selinus. Vallet and Villard adhere to Payne's absolute chronology of Corinthian and prefer to follow Diodorus and Eusebius in placing the foundation of Selinus in 650; on this assumption a date towards the end of the seventh century is required for the capture of Smyrna by the Lydians. At the same time I feel some uncertainty whether any of the Selinus pottery which has been published up to date is earlier than Transitional, and the capture of Smyrna seems to have occurred before the end of the Early Corinthian phase; so that thirty years could be a fair estimate of the interval separating the capture of Smyrna from the foundation of Selinus. Thus, if the Thucydidean date for Selinus were retained and the dating of Transitional and Early Corinthian were lowered slightly to conform to the new evidence, the capture of Smyrna could well be placed about the turn of the century, or not much after it.

[72] Von Olfers, *Abh. Berl. Akad.* 1858, 539 ff. The tumulus can be identified with certainty as that described by Herodotus (i. 93) on account of its size.

[73] Bowra, *Early Greek Elegists* 17.

[74] xiv. 634, from 'Nanno' (Fr. 9 Bergk, 12 Diehl). In their editions Kramer, Meineke, and Müller all affirm their belief that the whole passage is an interpolation in Strabo; and if this were so less reliance should be placed in the context. But the publication of the Vatican Palimpsest has shown that the mid-nineteenth-century editors of Strabo were altogether too audacious in hunting for interpolations

In fact, the Lydian theme is prevalent in the surviving fragments and citations of Mimnermus. The newly discovered couplet, which seems to portray fighting men advancing at a king's command, is said to come from a poem called Σμυρνηίς;[75] and the ἐλεγεῖα ἐς τὴν μάχην τὴν Σμυρναίων πρὸς Γύγην τε καὶ Λυδούς, which Pausanias mentions as opening with an invocation to the elder Muses,[76] can hardly be separated from this. More especially, in one fragment (14 Bergk, 13 Diehl) based on Agamemnon's exhortation of Diomede in the Iliad,[77] Mimnermus attempts to inspire in his fellow citizens a spirit like that of the famous champion of an earlier Lydian war—

οὐ μὲν δὴ κείνου γε μένος καὶ ἀγήνορα θυμὸν
  τοῖον ἐμεῦ προτέρων πεύθομαι οἵ μιν ἴδον
Λυδῶν ἱππομάχων πυκινὰς κλονέοντα φάλαγγας
  Ἕρμιον ἂμ πεδίον, φῶτα φερεμμελίην (κτλ.)

This passage must have been sung as an encouragement to the Smyrnaeans to prepare themselves for war or battle, and its utterance is therefore to be referred with some probability to the time of Alyattes' campaign against Smyrna. No critic could well have claimed that these martial passages of Mimnermus are 'sweet'; and if Mimnermus' work was divided into two books and the 'great lady' whom Callimachus contrasted with the 'sweet' pieces of Mimnermus is in fact 'Nanno',[78] then 'Nanno' must have been something of a miscellany and contained the *Smyrneïs* along with other exhortatory matter. It cannot, of course, be proved that any one of the known pieces of Mimnermus does not come from 'Nanno', nor that Mimnermus himself made any division of his works. But if the title 'Nanno' reflects such a division, it is reasonable to assume that it covers a body of poems circulated at one time, and that the occasion was Alyattes' attack on Smyrna. If on the other hand the division of the poems is of later date or non-existent, theme and temper must be the guides to the attempt to articulate Mimnermus' work. In either case it may well be that the martial passages should all be taken together as reflecting the urgency of the Lydian menace, and that it was in this crisis that Mimnermus found his *métier* as an inspirer of action and reached the greatest heights of poetry.

Of the man himself little is known. He was evidently a descendant of the Colophonians of Pylian origin who settled in Aeolic Smyrna; for by his use of the first person he identifies himself with them.[79] He is not likely to have been a young man at the time of Alyattes' attack, since the tone of his address to his fellow-citizens in the fragment quoted above implies a standing and seniority like that of Agamemnon at Troy.[80] It is not known whether he survived the capture of Smyrna.

---

of this sort in Strabo's text (see Aly, *De Strabonis Codice Rescripto* 240 f.).

The contexts of the two fragments about Helios (from 'Nanno') and Jason are not clear; but in each passage the opening words suggest that the couplets preserved are not part of a longer continuous narrative but self-contained examples of courage and endurance.

[75] Wyss, *Antimachi Col. Reliquiae* fr. 180.

[76] ix. 29, 4. Pausanias also pictures Aristomenes as exhorting the people of Messene to emulate the exploits of the Smyrnaeans, who expelled Gyges and the Lydians from their city (iv. 21, 5); and no doubt here too he had the elegies of Mimnermus in mind. If this story is to be credited, it may be argued that the final issue of the Second Messenian War was subsequent to Alyattes' attack on Smyrna and that Tyrtaeus imitated Mimnermus rather than the reverse. But the reference to Smyrna here is not likely to depend on any genuine historical tradition.

[77] iv. 370 ff. Cf. Jacoby, *Hermes* lxiii. 288. The analogy could be extended to show that Mimnermus' exhortation does not necessarily imply any lack of valour on the part of the Smyrnaeans.

[78] This is of course disputed: see the most recent discussion by A. Barigazzi, *Hermes* lxxxiv. 162 ff. For the Callimachus passage see *Ox. Pap.* xvii. 2079, 11–12; *CR* 1929, 214.

[79] Fr. 9 Bergk, 12 Diehl. Cf. Jacoby, *Hermes*, liii. 268 ff.

[80] If Gyges' attack on Smyrna (Hdt. i. 14, 4, ἐπεί τε ἦρξε) occurred in the early part of his reign (i.e. in the early years of the seventh century), Mimnermus' statement that he had heard of the unnamed champion's prowess from eyewitnesses would fit with a date about or shortly after the middle of the seventh century for the poet's birth. That this is not precluded by Solon's poem to Mimnermus is shown by Jacoby, op. cit. 278 n. 2.

The Village Period

The old city seems to have been left in a ruinous state after the capture. The great pile of the siege mound was not levelled out; and despite constant erosion of the top soil it has remained the dominant feature of the *tell* until the present day.[81] Evidence from the cut on the east side of the site (Squares H–Jxxii) shows that the mud brick superstructure of the fortification there fell forward at the time of the capture or very soon after. With one exception the houses of the old city, so far as they have been revealed by excavation, were not repaired subsequently, though the stone footings for the most part remained and were partly re-used in the sixth century; in the house at the north end of the trench in Square Kxi, however, the mud brick of the upper walls did not at once collapse, but gradually gave way and became covered with debris. After the destruction there is a distinct gap in the pottery on the site, and (so far as can be judged) remains of the first quarter of the sixth century are negligible.

The first sign of regular re-occupation comes with Corinthian pottery of about the end of the Middle Corinthian period and Attic of about the end of the first quarter of the century. To this time should date the construction of a house, on a different axis from that prevalent at the time of the destruction, in the trench in Square Kxi. Some badly corroded Corinthian pottery of about this time was also recovered by villagers in surface quarrying in 1952 in the east part of the classical cemetery to the north of the site; it presumably indicates a burial at this date. The house in Square Kxi was destroyed by fire distinctly before the middle of the century, when the great Attic lebes gamikos from the workshop of Sophilos (below, pp. 154 ff., PLATES 31, 32) was destroyed; to judge by the presence of black-figure sherds of a relatively early date (e.g. PLATE 33, **2**) there must also have been some occupation at this time in the now eroded area on the east of the big trench in Squares E–Fxii–xiii. The platform of the temple itself was apparently left in its ruined state, but a massive building seems to have been set up on the east part of its south terrace with a basement in the old sunken Pylon. By the middle of the sixth century there seems once again to have been habitation, in modest but sturdily built houses, on a considerable part of the *tell*; and this probably gained in intensity during the second half of the century, since sherds of this period have come to light at many points on the edges of the site and even a few corroded fragments from the denuded slope beyond the isthmus close to the modern village. This cannot have been on a scale approaching that of the seventh century, since the mound remained untouched and there is no sign of regular buildings of the advanced sixth century in the trench in Squares K–Lxi–xii; but the prosperity of this settlement is reflected in numerous burials in handsomely painted terracotta sarcophagi in the archaic cemetery on the west side of the 'River Meles' delta (PLATE 1). The sixth-century levels have yielded deposits of pottery which are especially valuable for the archaeological history of archaic Ionia: the principal points are the Burnt House (of the second quarter of the century) in Square Kxi and a burnt stratum of the middle of the century in the Temple Pylon, deposits of the third quarter of the century among the houses in Squares F–Gxi–xii, and the debris of the end of the sixth-century habitation. The fragments of a large jar (PLATE 6*b*) and the 'Lydian' cup (PLATE 4*a* right) were found in the Pylon; the remaining vases on PLATE 4 are characteristic of the household pottery found in the levels of the second half of the sixth century. This flourishing occupation seems to have come to an abrupt end, though not by fire and apparently not with violence. It is clear from the pottery that this occurred in the late black figure period, and corroborative evidence that it was considerably later than the Persian conquest is afforded by the discovery in this level of an Ionic vase fragment apparently depicting the Persian king Cambyses, and a hoard of twenty silver coins containing four Daric sigloi (a part of the hoard is shown in PLATE 3*a*.)[82] Since the stratum was not securely sealed, the debris of this time was found contaminated by some subsequent accumulation; and in the lack of early red figure the figured pottery is not susceptible of very precise dating. But from a close study of the relatively abundant black-glazed ware of Attic manufacture it appears that the intense occupation in our trenches ceased very soon after 500 B.C. and distinctly before 480 B.C.[83]

---

[81] Comminuted seventh-century pottery, presumably drifted from the surface of the mound, was found in the make-up of all building stages down to the end of the occupation in the adjacent trench in Squares K–Lxi–xii, as also on the surface in the vicinity of the mound.

The fifth century is in the main meagrely represented on the site, and the evidence for occupation rests primarily on the limited amount of pottery that can be attributed to this period. Fragments from a volute crater attributed to the Niobid Painter, dated about 460 B.C. (below, pp. 170 ff., PLATES 40, 41) were found scattered over the remains of the sixth-century houses in the west part of the large trench in Squares F–Gxi–xii; other sherds from handsome fifth-century Attic vases were discovered here and to the south-east and south of the mound, and an Achaemenian carved seal with a silver clasp was also found here. These finds suggest that in the middle ranges of the fifth century there was habitation of some consequence in the vicinity, perhaps in the unexcavated area immediately east of the mound. Remains of the fifth century from other parts of the site are almost negligible.

In the fourth century B.C. occupation again became dense. The strata of this phase were found best preserved in the trench in Squares K–Lxi–xii, where three main levels of habitation were found. The builders here did not utilize the solid archaic foundations, and the houses, like the sixth-century Burnt House before them, were laid on an axis oblique to that of the seventh century. The first of these constructions seem to date from the last years of the fifth century. By the early fourth century the habitation had become closely packed, and at this time or in the course of the first half of the century it seems (to judge by the wide diffusion of remains and surface pottery of this period) to have spread over more or less the whole of the peninsula site. To sustain this occupation on the edges of the site, sturdy revetting walls were constructed at some points where the bank had crumbled; and during this period a wall, which has been traced at least from the Fountain House in the south (Square Lxxiii) as far as a bastion of irregular curved outline at the north-east corner (Squares Cxvi–xvii), was built along the edge of the flat ground below the bank. The latter, though not comparable in strength to the archaic fortification, can hardly be other than a circuit wall, and there is some evidence—both from previous observations of the course of walls and the distribution of surface pottery—that this circuit was carried over on to the mainland to enclose the habitation there.[84] In the north part of the peninsula site water was provided by a stone-lined well and at the south end by a vaulted fountain chamber—the latter possibly an older installation continuing in use. A cobbled pavement or fill of the fourth century, revealed by excavation in Squares Kvi–viii, was at the time of its excavation in 1949 referred to a road or causeway giving access to the peninsula site; but Mr. Nicholls is now inclined to regard it as the core of a plundered fortification wall. This fourth-century occupation seems to have come to an abrupt end at a date, to judge by the black-glazed pottery, not later than the end of the third quarter of the century. No trace of Hellenistic habitation has come to light on the hill, but a burial in a stone sarcophagus in Square Nxiv yielded a silver didrachm of Alexander the Great; and little enough has been noted in the vicinity of the peninsula site. Faint traces of occupation of Roman date have come to light at isolated points on the north-east, south, and west edges of the *tell*.

---

[82] From the context it is clear that the sigloi are of Darius I. Besides two worn Lydian coins, the hoard contained fourteen diobols of a single type similar to the Phocaean, which were in fresh condition and presumably recently struck.

It is worth noting that Prokesch von Osten remarked that Darics were found at the site (together with staters of Phocaea, Clazomenae, and Cyme) and used them as evidence that Old Smyrna was not entirely defunct after Alyattes (*Jahrbücher der Literatur* lxviii (1834), Anzeige-Blatt, p. 59).

[83] Cf. Mr. Boardman's observation in the section on Attic wares, (below, p. 152).

[84] The course inferred for this wall is marked on the plan PLATE 1. The ground here is for the most part hopelessly denuded, and no wall line can now be traced with certainty; but so far as it has been possible to fix the exact provenience of cist blocks and chance finds, the most westerly graves of the classical cemetery appear to lie close outside this assumed line, whereas corroded fourth-century pottery (mainly fragments of wine amphorae) is found in the denuded ground on the inside only of this line. For the description and discussion of this wall see Mr. Nicholls' account, below pp. 93, 135 f.

Strabo records that after the capture by the Lydians Smyrna for about 400 years continued to be inhabited village-wise, until Antigonus and, after him, Lysimachus restored it (Λυδῶν δὲ κατασπασάντων τὴν Σμύρναν περὶ τετρακόσια ἔτη διετέλεσεν οἰκουμένη κωμηδόν· εἶτα ἀνήγειρεν αὐτὴν Ἀντίγονος, καὶ μετὰ ταῦτα Λυσίμαχος (xiv. 646)). The figure of 400 years, whether a simple error or not, is certainly false.[85] But there is no cause to doubt the correctness of the statement that after the Lydian conquest the population lived in village fashion. The only doubt is in the meaning of the phase οἰκουμένη κωμηδόν, which is not specific enough to permit a distinction between a plurality of villages and open settlement. But the significance of the phrase for the status of Greek Smyrna is unambiguous: it was broken up and ceased to be a city. In the first twenty or twenty-five years after the capture the old site seems to have been almost totally abandoned, to judge by the results of the excavations. The first attempts to re-inhabit it must have occurred in the later part of Alyattes' reign, but it seems (on current chronology) not to have been until after Croesus' accession that the new occupation developed on a regular plan. This may indicate a deliberate policy on Croesus' part. At first sight it seems inconsistent with his treatment of the Ephesians, who were compelled to leave their old fortified city and settle in the low ground.[86] But conditions at Smyrna were different, since the Greek city had not existed for over a generation and there appears to have been a considerable Lydian element present.[87] While the old site seems in the sixth century to have resumed something of its former dominant position, there is nevertheless evidence of the existence of at least one smaller village, at Bel Kahve (p. 17)—if not also of one at Bornova[88]—and the fragment of a white marble capital suggests the existence of a sanctuary, perhaps of Artemis, at Halka Pınar (p. 4).[89] After the collapse of the Lydian empire (*c.* 546 B.C.) Smyrna evidently offered no resistance to the Persians, since there is no sign of any fortification or widespread damage on the site in the third quarter of the sixth century. For the abandoning of the flourishing habitation on the site, which seems to fall in the opening years of the fifth century, a likely occasion would be the Persian offensive in the later stages of the Ionian Revolt (499–494/3 B.C.), when Artaphernes and Otanes descended to the coast and captured Clazomenae and Cyme;[90] the mainland site at Clazomenae also appears to have been abandoned at this time.[91]

---

[85] Strabo may have been erroneously calculating from the time of Gyges' attack; but the excavations have borne out Herodotus' statement by showing that Smyrna was a flourishing city until the time of Alyattes. More probably the village period is meant to start with Alyattes; Head has also miscalculated this period by a hundred years (*HN*² 592). It is, of course, possible that Strabo misread τ' as υ' in a Greek source such as Artemidorus (for similar errors cf. Aly, *De Strabonis codice rescripto* 246 f.).

[86] Cf. Strabo xiv. 640.

[87] This is suggested by the presence of Lydian wares (marbled ware, lydions, &c.) and one or two Lydian graffiti among the sixth-century pottery, and a mid-sixth-century tumulus burial with offerings of a Lydian character.

[88] Cf. the marble lion's-head spout from Bornova (p. 4, PLATE 3 *b*).

[89] Also the literary evidence for a sanctuary of the Nemeseis on the Pagos with statues of the Graces by Boupalos (cf. Cadoux, *Ancient Smyrna* 89 n. 2).

As regards the capital reported to have been brought to the Smyrna Museum from Halka Pınar, there may be some uncertainty about its provenience if it is the same capital which Schefold remarks as being from Miletus (*Larisa* i. 147 f.; cf. R. Martin, *BCH* lxviii–lxix. 361 f.). But remains of a temple were noted by Spon and by Prokesch at Halka Pınar. Mr. Boardman drew my attention in the Ashmolean Museum to a marble block *c.* 6 ft. long with late archaic egg and tongue moulding, which was brought from Smyrna by Hyde Clarke; unfortunately no more precise provenience is given.

[90] Hdt. v. 123.

[91] On the evidence of the surface pottery, cf. my article, 'The Topography of Clazomenae', in the second memorial volume for Professor Oikonomos (*AE* 1953–4, 153 f.).

It is hardly possible to make a comparison between Smyrna and other cities of the coast in the sixth century. There is no trace at Smyrna of a great sanctuary such as those of Ephesus, Samos, and Miletus, nor of major buildings such as those of the excavated site called Larisa. On the other hand, the remains of habitation suggest a greater prosperity than at the Larisa site. Wine was again imported from Chios in considerable quantity; the Attic pottery is substantial in volume and includes some black figure of the first quality; and pottery was also brought from other Ionic centres, and from Corinth, Sparta, and even Central Italy.

The history of Smyrna in the fifth century is completely obscure. It did not join the Athenian Empire and does not appear to have been entered even in the later Athenian assessment lists. The Athenian triremes did not enter the inner parts of the gulf (which seems to have been reckoned as belonging to the interior rather than to the Aegean coast[91a]), and the territory of Smyrna was no doubt firmly controlled by the Persians, whether through landlords or nominees. Habitation on the old site was slight, if indeed it was not appropriated for the official residence. Some of the tumuli in the cemetery to the north of the site belong to this period. The fortified 'Acropolis' on a crest of the mountain above (p. 5), together with the Small Fort (above, p. 5) which guards the road eastward from the peninsula site, has in the past been the subject of a wide divergence of dating. Certain constructional features, however, point to a relatively late date; and the few fragments of recognizable pottery and of tiles on the surface there seem to indicate an occupation more or less contemporary with that which commenced in the late fifth century on the old site below and continued there into the second half of the fourth century. The fourth century in fact seems to have been an era of petty tyrants in Ionia and the Aeolis; and this acropolis is perhaps best explained as the stronghold of a local governor or landlord. The rise of the new harbour town on the old site about the beginning of the fourth century is matched by a similar urban development at Colophon,[92] and may be attributed to the new conditions after the withdrawal of Athenian protection from the coastal cities; the vicissitudes of the times that followed the collapse of Athenian control drew Smyrna and Colophon closer to the other cities of the coast, with their greater independence and insecurity. This urbanization is therefore a prelude, on a smaller and meaner scale, to the larger concentrations that were imposed on the Ionic cities by the rival policies of the successors after Alexander's death.

For this earlier urbanization resources were lacking such as the Hecatomnids controlled in

---

[91a] To both Xenophon and Ps.-Scylax the Hermus Plain on the north side of the Gulf of Smyrna is inland from Cyme (ὑπὲρ Κύμης). In Xenophon this is quite clear (*Hell.* iii. 4, 27). In Ps.-Scylax (97c–98) the reading must be πόλις Μύρινα καί λιμὴν, Κύμη καὶ λιμὴν (ὑπὲρ δὲ Κύμης ἐν μεσογείᾳ πόλις Ἑλληνίς ἐστιν Αἰγαὶ καὶ Λεῦκαι καὶ λιμένες καὶ Σμύρνα ἐν ᾗ Ὅμηρος ἦν), Φώκαια καὶ λιμὴν καὶ Ἕρμος ποταμός, Κλαζομεναὶ καὶ λιμήν, Ἐρυθραὶ καὶ λιμήν . . . . The editors, by ending the parenthesis at Αἰγαί, have made Leucae and Smyrna places of the coast, presumably on the ground that since they lie on the sea they could not be spoken of as being in the interior behind Cyme. But Leucae and Smyrna are then out of place on the coast before Phocaea; and a study of the uses of καὶ and of asyndeton in Ps.-Scylax shows the accepted punctuation to be false. The *periplus* of the coast is resumed by asyndeton at the word Φώκαια, and Cyme, Phocaea, Clazomenae, Erythrae represents the correct sequence of coastal cities.

If the evidence of the tribute lists is taken into account, it seems probable that in the fifth century even the roadstead of Clazomenae lay outside the normal range of the Athenian marine, and that before 427 B.C. communication between the Athenians and Clazomenae may have been maintained through Airai; Clazomenae is exposed to the full force of the Etesians, and in the confined waters of the Hermeian Gulf, where there were no snug coves and the coasts were hostile, the danger to a lone trireme would have been grave. It is notable that the raising of the tribute of Clazomenae from a paltry one and a half talents to six talents in 427 B.C. (in itself a very remarkable increase) coincides with the activity of the squadron of the ἀργυρολόγοι on these coasts at the time of the Mitylenaean Revolt; no doubt the raising of the tribute was the response of the Clazomenian *demos* to the visit of the Athenian fleet. The smallness of the tribute before 427 B.C. and the subsequent bitterness of party politics there would fit with the assumption that Clazomenae, like Colophon, was a border city between the Persian and Athenian empires, and that political harmony there depended as much on good relations between the oligarchs and the Persians as upon adherence to the Athenian empire. But the question cannot be fully discussed here.

[92] Cf. *Hesperia* xiii. 91 ff.

Caria, and the cramped installations of the fourth century compared unfavourably with the commodious conditions of the seventh; the successive rebuildings of the houses (as also at Colophon) in the fourth century, occasioned no doubt by the earthquakes to which Smyrna is especially prone, indicate the inadequacy of the construction.[93] The tiled roofs, however, which seem to have replaced rolled loam roofs in the advanced fifth century, gave less trouble after rain; and the water supply in the town was perhaps improved (p. 30). Terracotta bathtubs, now portable, were smaller and more uncomfortable in the fourth century;[93a] but domestic lavatories seem to have come into use at the beginning of this period. A 'mechanical' method of grinding corn was introduced with the hopper quern in the fifth century. The portable terracotta braziers for cooking were of a type already established in the seventh century; oven dishes were current from the sixth century on. Terracotta spit-holders for the roasting of a whole lamb, of which examples were found in the early Greek levels on the site, are lacking in classical times; and one gets the impression of retail purchasing by the housewife for the needs of the family unit. In the late period a wide range of terracotta utensils was in use in the kitchen, and from the second half of the fifth century small, quick-heating cooking pots and tight-lidded casseroles came to replace the old-fashioned, thick-walled stock pot; this probably betokens a minor revolution in the art of cooking. The service and table ware of this late period is also in the main a meaner utility ware, with the capacity of the jugs, bowls, and drinking cups diminished. The minor arts have been swamped by mass production, and the impression is given that the dignity of the house now counts for less than easy running. The changes in part at least reflect the way of life of a less leisurely middle class with relatively little cheap labour at its disposal, such as we may assume to have been growing up in Ionia; in fact city plans such as those of Rhodes[94] and Olynthus (the latter with its standardized houses with bathroom and kitchenette) suggest that the convenience-loving middle class was coming into its own in the Aegean area generally by the late fifth century. Wine was imported in very large quantity, to judge by the immense numbers of shattered wine amphorae found in the excavation of these levels at Smyrna—mainly Chian, but also imported from Thasos and a number of other centres;[95] it can therefore be assumed that the harbour town was importing wine for local distribution and perhaps also for transportation inland. Eloquent testimony to the popularity of imported wine is afforded by bowls of archaic date, in whose ornamentation standard containers are incorporated (PLATE 6*e*). Smyrna is also mentioned in an Athenian decree of 387 B.C. as a place from which the Clazomenians appear to have been importing grain.[96] The small bronze coins of this period found in the excavations are not numerous and shed little light on the commercial activity of the times.

Despite the evidence that Smyrna in the fourth century became a flourishing harbour town and that this settlement assumed the dominant position in the Smyrnaean land,[97] there is no clear indication that it came to rank as a Hellenic city until the new foundation was made across the bay. Strabo's phrase διετέλεσεν οἰκουμένη κωμηδόν (p. 31) is clearly intended to apply until the time of the new foundation; and the citation in Ps.-Scylax *Periplus*, dating shortly before Alexander's invasion of Asia, is simply Σμύρνα ἐν ᾗ Ὅμηρος ἦν.[98] No inscriptions are known from the fourth-century town, and no coins recognizable as Smyrnaean came to light in the stratified levels in our excavations.[99]

---

[93] Bürchner, *RE* s.v. Smyrna 739, refers to a Marburg dissertation, Weismantel, *Die Erdbeben Kleinasiens*; cf. also *RE* Suppl. iv. 353.

[93a] See also my article on bathtubs in *Greece and Rome* 1959.

[94] Kondis, Συμβολὴ εἰς τὴν μελέτην τῆς ῥυμοτομίας τῆς Ῥόδου (Rhodes 1954).

[95] A count made by Mr. D. T.-D. Clarke revealed that some 400 amphora toes were found in fourth-century levels in the trench Squares K–Lxi–xii in 1948 alone, and many more came to light when the excavation of these levels here was completed in 1949. The amphorae may of course have been re-used for other purposes after the wine was consumed.

[96] *SIG*^{3} 136.

[97] A single position for the settlement that preceded the new foundation is implicit in Paus. vii. 5, 2 ((ἀναστήσαντα ἐκ τῆς προτέρας (*sc.* πόλεως; cf. πέρην ἱεροῖο Μέλητος in the oracle ibid. 3, p. 23; cf. also the survival of the name πόλις ἀρχαία until Pausanias' day, ibid. 1).

On the date of the new foundation of Smyrna across the bay there is patent disagreement between the ancient authorities. Strabo speaks of the new city as being a foundation of Antigonus, and after him Lysimachus (p. 31), whereas in the local tradition preserved by Pausanias,[100] frequently referred to by Aelius Aristides[101] and commemorated on coins of the later second century after Christ, Alexander the Great is made the founder; in this local tradition Alexander descended from Sardis to Smyrna (in 334 B.C.), and in accordance with instructions communicated to him by the Nemeseis while he was sleeping on the Pagos he founded the new city on that spot and removed the Smyrnaeans to it. This story no doubt partakes of the fabulous, but the ascription of the new foundation to Alexander must have had Hellenistic authority, since it finds its place in Pliny the Elder.[102] If Strabo were right, the earliest possible date for the foundation would be 319 B.C. when Antigonus became master of Ionia, and much of the work must have been carried out after 302 B.C., when Lysimachus began to contest the possession of this coast. In default of excavation in early Hellenistic levels at New Smyrna no assured date can be given for the foundation on this site. But the evidence of the black-glazed pottery from the uppermost level at Old Smyrna, which seems to indicate that habitation there came to an end within Alexander's lifetime, offers strong support to the local tradition which attributes the foundation to Alexander himself. The inception of the new city may therefore date to 334 B.C.[103] It may well be that the new city was not fully established with its fortifications and public buildings complete until the time of Lysimachus, and that we should seek to reconcile the two traditions with a formula like that of Tarn, who speaks of Smyrna as a city that Alexander planned and others built.[104] But the old site seems nevertheless to have been abandoned at the outset; the inscription *CIG* 3184, which has been adduced as evidence of continued occupation on the old site, is altogether too problematical to be considered in this connexion, and the survival of the name 'Old City' into the times of Strabo, Pausanias, and Aelius Aristides (pp. 12 f., 33) may be credited to that capacity for archaeology which distinguishes the Greek throughout the ages.[105]

J. M. Cook

---

[98] See n. 91a. It may be questioned whether Ps.-Scylax would have mentioned Smyrna at all, had it not been Homer's birth-place.

[99] The well-known silver tetradrachm published by Weber, *Corolla numismatica Head* (1906) pl. 15. 6 (cf. Cadoux, *Ancient Smyrna* 92), whatever the occasion of its minting, can hardly rank as evidence of the political status of Smyrna in the fourth century so long as it is unsupported by bronze issues. Apart from the peculiarity that the lyre had nine or ten strings, the obverse and reverse types are pure Colophonian ones of the first half of the fourth century B.C. (cf. Milne, *Kolophon and its Coinage*, pls. 3–4), and the coin should perhaps rather be considered a Colophonian issue struck on behalf of the Smyrnaeans.

[100] vii. 5. 1–2.

[101] Cf. Cadoux, op. cit. 95.

[102] *NH* v. 118.

[103] The lack of street drainage, which is remarked by Strabo (xiv. 646) as a serious omission in the planning of the new city of Smyrna, might possibly be argued as showing that Smyrna was an earlier foundation than the new cities of the diadochs.

[104] *CAH* vi. 429, *Alexander the Great* i. 133.

[105] In the writing of this section on the history of Old Smyrna I have had the benefit of advice and assistance from Professor Sir F. E. Adcock on the historical issues, of Mr. J. K. Brock, of Mr. J. Boardman, and above all of Mr. Nicholls, to whom many of the observations incorporated in it are due.

OLD SMYRNA: THE IRON AGE FORTIFICATIONS AND ASSOCIATED REMAINS ON THE CITY PERIMETER

(PLATES 7–20)

Page

I. INTRODUCTION . . . 36

II. A DESCRIPTION OF THE EXCAVATED REMAINS . . . 39
1. Section λ–λ′ (Hxxii, Jxxi–xxii)[1] . . . 39
2. From Section λ–λ′ South to Section μ–μ′ (Jxxi–Hxxii—Kxxii–xxiii) . . . 52
3. South-west of Section μ–μ′ in the Vicinity of the Fountain-House (Kxxii–xxiii—Mxxii–xxiii) . . . 56
4. The Fountain-House (Lxxiii) . . . 58
5. From the Vicinity of the Fountain-House South-west to the Modern Bayraklı–Bornova Road (Mxxii–xxiii—Pxxii–xxiii) . . . 64
6. From Section λ–λ′ North to the North-east Gate (Hxxii–Jxxi—Exviii–Dxix) . . . 65
7. The North-east Gate Area, including Section κ–κ′ (Exviii–Dxix—CDxvi–Exvii) . 68
8. To the North of the Temple, including Sections θ–θ′ and ι–ι′ (CDxvi–Exvii—DExiii) 75
9. To the North of the Main Occupation Probe, including Section η–η′ (DExiii—EFxi) 82
10. The Mound, including Sections β–β′, ε–ε′, and ζ–ζ′ (EFxi—Kv–x) . . . 88
11. To the West of the Mound (Kv–x—Mix–xi and Outlying Probes in Gi, Hi–ii, Jiv, and Jvi) . . . 91
12. The South-west Side of the City (Mix–xi—Pxxii–xxiii) . . . 93

III. MATERIALS AND CONSTRUCTION . . . 95
1. The Socle . . . 95
   (*a*) *Earth fill* . . . 95
   (*b*) *Stone fill* . . . 96
   (*c*) *Stone faces* . . . 96
   (*d*) *Mudbrick packs* . . . 100
   (*e*) *Drainage through the socle* . . . 106
2. The Superstructure . . . 106
3. The Development of Early Greek Fortifications . . . 114

IV. THE HISTORY OF THE IRON AGE FORTIFICATIONS OF OLD SMYRNA . . . 120
1. Before the Building of Wall 1 . . . 121
2. Wall 1 . . . 122
3. Wall 2 . . . 123
4. The Collapse of Wall 2; Wall 2/3 and other Constructions of the Intermediate Period 124
5. Wall 3 . . . 126
6. The Lydian Capture of Smyrna . . . 128
7. Subsequent Traces: Wall 3/4, the Forts, Wall 4 . . . 134
8. The Fate of the Fortifications after the Abandonment of the City in the Fourth Century B.C. . . . 136

---

[1] The grid references are to the plan of the *tell*, PLATE 74. The way in which they are made is explained on p. 37.

I. INTRODUCTION

TRACES of fortifications around the area apparently once occupied by the city of Old Smyrna were observed by Louis Fauvel, and our first detailed description of them is that of Prokesch von Osten,[2] who accompanied him there on a second visit in 1825. As we shall see later,[3] it seems likely, though proof is no longer possible, that most of the circuit wall around the *tell*, as well as that on the low spur to the west of it on which the modern village now stands, as described by Prokesch, may have belonged to the defences of the classical city.[4] Nothing today survives of these above ground, owing to extensive stone-plundering in the interval; and it is to be feared that the fate of much of this rather exposed classical enceinte has been to provide masonry either for the houses of the modern village or for the terrace walls which today encircle the *tell*.

The plundering of this outermost circuit probably left the earlier ones inside it rather more exposed to view. I have not been able to verify which of the city walls it was that was photographed by Keil in 1911,[5] but when Franz and Helene Miltner excavated here in 1930 a part of the late-seventh-century B.C. circuit was visible on the east side of the city.[6] Here they cleared about 80 metres of its face, for the most part to no great depth, then picked up its line again with a small probe some 20 metres farther north. Two further small trenches seem to have located more of this late-seventh-century wall-line south-south-west of their long cut, in addition to traces of yet other circuits.[7] Besides this they report sinking two shafts into the mound dominating the north-west corner of the *tell*[8] and making two small probes in occupation levels within the city itself.[9]

However, it seems likely that these investigations detailed by F. and H. Miltner do not represent the only previous excavation carried out on the Old Smyrna site. Our own work has revealed evidence of deep pits inside the city area in KLxii and in Jxviii–xix,[10] in the mound to the north-west of the *tell* at Gix,[11] and at the north-east gate in Cxvi–xvii.[12] Material from the first three of these suggests that they have been dug fairly recently, probably within the past century, whilst the last has simply trenched along the north face of the Middle Geometric tower. These diggings do not seem to have served any workaday purpose such as stone-plundering or tree-stumping.

---

[2] *Jahrbücher der Literatur* lxviii (1834), *Anzeige-Blatt* 55 ff. Quoted by O. Walter, *ÖJh* xxi–xxii *Beiblatt* 226–7.

[3] pp. 92 ff., 128, 137.

[4] The remains of the circuit wall on the spur projecting from the hill-side to the north-west of the *tell* as described by Prokesch have since vanished under the expanding modern village. The area in question is shown on the plan of the city environs, PLATE 1, and the possible limits of these fortifications are there suggested, but no certainty is at all possible. These traces were probably visible to Texier, who seems to have represented them, though not very intelligibly, on his plan, *Description de l'Asie Mineure*, pl. 129. They were not recorded by Hirschfeld in 1871 (*Abh. der kön. Ak. der Wissenschaften zu Berlin, phil.-hist. Kl.* 1872, 74 ff., pl. iv) and had presumably already disappeared, but traces of a wall-line that may have linked this defence system with that of the *tell* were seen by Conze in 1898 (*AA* 1899, 15–16) and these may have survived until considerably later (p. 135 below).

[5] F. and H. Miltner, *ÖJh* xxvii *Beiblatt* 162, take this to be part of the wall whose outer face they cleared on the east side of the city and which our subsequent investigations have dated to the late seventh century B.C.

[6] F. and H. Miltner, op. cit. 162 ff., figs. 81–83; H. Miltner, *Eski İzmir* 16, figs. 17–18.

[7] *ÖJh* xxvii *Beiblatt* 166–7, fig. 84. Some uncertainty remains about the identification of the walls revealed by these most southerly probes of the Miltners. The position is discussed at p. 56 n. 99. Cf. also p. 64. Apart from these two which involve special difficulties, the positions of the Miltners' trenches have been approximately marked from their indications on our plan of the *tell*, PLATE 74. Their positions on the grid are as follows: long trench: Fxx–Jxxiii; trench to the north of it: Exix; probes in the mound: Gviii–ix, GHix; probes inside the city: JKx–xi, LMx–xi.

[8] Op. cit. 167–8; H. Miltner, *Eski İzmir* 16–17.

[9] *ÖJh* xxvii *Beiblatt* 167.

[10] These will be dealt with in the forthcoming publication of the domestic architecture in these areas.

[11] p. 88 n. 245.

[12] p. 71 n. 157.

The aim of the present study is to describe the further exploration of the fortifications of the city carried out by the Anglo-Turkish excavations of 1948–52. It thus forms a part of the publication of the Iron Age architecture and stratigraphy of the site, of which the other sections projected cover the houses, the temple, and the outlying cemeteries. In order to show the sequence of strata this account will attempt to record all remains found on the perimeters of the Iron Age cities. It will, however, confine itself to the strictly excavational data, since the different classes of pottery and other finds from the site are to be the subject of a series of specialized studies. The interpretation of the dating material given here is quoted directly from the preliminary assessment made by J. M. Cook at the time of excavation. He would stress that this is essentially provisional and that parts of it may call for revision as the material is more adequately studied. Reference to finds other than pottery is here based on their inventory descriptions.

The exploration of the city's fortifications was carried out under Professor J. M. Cook's direction, but has been the work of many hands. It was instituted in 1948–9 by J. K. Brock whilst the large mound to the north-west of the *tell* was probed in the same period by Dr. Baki Öğün.[13] Further work was carried out in 1949 by Dr. L. H. Jeffery, B. B. Shefton, Dr. W. C. Brice, and A. G. Hunter, in 1950 by Mrs. N. Kalfas and Dr. A. E. Ozanne, and in 1951 by Dr. J. F. Healy, Miss D. H. F. Gray, and J. K. Anderson. The large area of occupation investigated to the west of the temple providing the key to the Iron Age stratification of the city was cleared by our Turkish colleagues in 1948–51 under the direction of Professor Ekrem Akurgal. To all of these I am more indebted than I can state for their accuracy of observation and sharpness of perception. While I do not doubt that there will be mistakes in the account that follows I feel sure that these can only arise from misunderstandings on my own part. My contribution consisted mainly of surveying and section-cutting done in 1949–50 and 1952, in which I have been greatly helped by drawings and suggestions from Dr. and Mrs. S. Corbett. I am also indebted to the Committee of the British School at Athens for assistance towards the preparation of this and other Smyrna material for publication. But above all else I wish to record my gratitude to Professor J. M. Cook, whose help has really made this study possible.

The sources of the photographs will be acknowledged in the text. Professor M. S. Şenyürek was able to examine some of the skeletal material and give a preliminary judgement on it. It is to be hoped that in time he may find the opportunity to publish a detailed study of the human remains from the site. Regrettably this account has to go to press still without receiving any of the analysts' reports on the samples from metal-working, carbonized material, &c., mentioned below.[14] Consequently the opinions on these matters here given are provisional and quite unprofessional. I have been helped a very great deal in these difficulties by suggestions from Mrs. S. Corbett and Dr. W. C. Brice. I am also indebted to Miss N. K. Sandars for assistance with the arrowhead bibliography on pp. 129 ff.

In addition to the plans and drawings published with this article considerable recourse will have to be had to the plan of the environs of the city[15] and the plan of the *tell*.[16] In the latter case reference is made to the 20-metre grid squares in terms of the co-ordinates crossing at the top left (i.e. north) corner of the square involved. Where closer reference needs to be made, these 20-metre squares are to be regarded as being subdivided into 2-metre ones numbered 0–9 from left to right and from top to bottom.[17]

---

[13] pp. 88 ff, Sections ϵ–ϵ', ζ–ζ'.

[14] It seems desirable to enter a plea for the establishment of a competent international laboratory for the purpose in the Aegean area itself, where local conditions might be better apprehended and Customs complications avoided.

[15] PLATE I.

[16] PLATE 74, the large folded colour plan at the rear. The clear overall picture afforded by the use of colour has not been achieved without some simplification; also, in the case of the houses and temple (but not of the fortifications) there has been a slight fluidity in the division between later Geometric (green) and pre-Alyattan archaic (red), in a few instances structures of the beginning of the seventh century B.C. being, for better differentiation, shown in green, whereas the division is otherwise made at *c.* 700 B.C.

The somewhat heterogeneous placing of the probes on the city perimeter to which the plan of the *tell* bears witness is not merely an expression of the different personalities of the many excavators involved. The location of most of these trenches was dictated by the fact that they had to be dug in vineyards without causing damage to vines. The great majority only cleared the surface debris covering one or another of the circuit walls.[18] Further, as for cultivation reasons these probes usually had to be filled in immediately after digging, the same features had sometimes to be relocated on more than one occasion. We are deeply indebted to the Turkish Wine

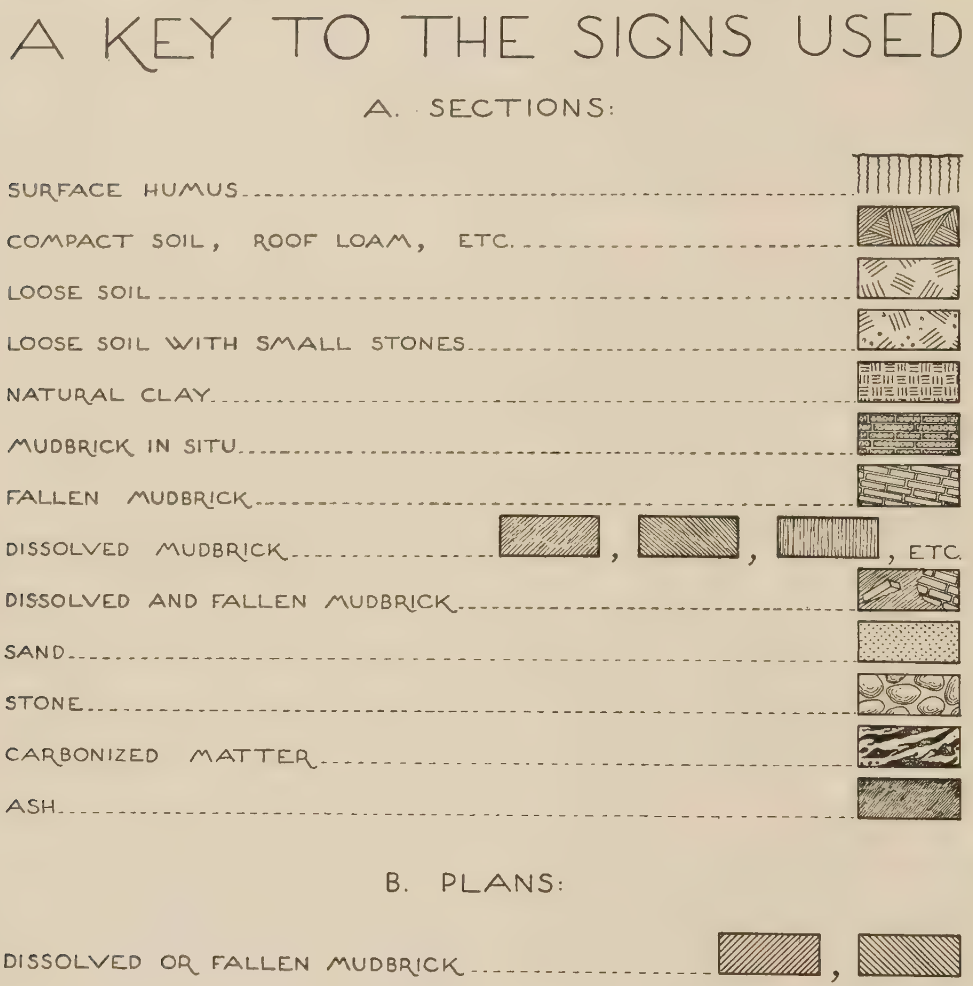

A KEY TO THE SIGNS USED
A. SECTIONS:
SURFACE HUMUS
COMPACT SOIL, ROOF LOAM, ETC.
LOOSE SOIL
LOOSE SOIL WITH SMALL STONES
NATURAL CLAY
MUDBRICK IN SITU
FALLEN MUDBRICK
DISSOLVED MUDBRICK
, , , ETC.
DISSOLVED AND FALLEN MUDBRICK
SAND
STONE
CARBONIZED MATTER
ASH
B. PLANS:
DISSOLVED OR FALLEN MUDBRICK
,

Fig. 1

---

[17] Thus H4.x5 gives the position of the modern well in the square more loosely referred to as Hx.

[18] The only surface indications were of the outer face of the seventh-century B.C. circuit at Section λ–λ′ and at FIG. 10, *k* towards the south-east of the city and of a small portion of the Middle Geometric tower at the north-east gate.

Monopoly for the good humour with which they bore with all of these embarrassments to their harvest and for allowing us even to breach the modern terrace walls bounding the *tell*.[19]

The signs used in drawing out the sections are mainly those proposed by Sir Mortimer Wheeler for use in India.[20] But as some modifications have been made, principally in the interests of distinguishing superimposed strata of dissolved mudbrick, it has seemed best to give a key to them all (FIG. 1).

In the description of the excavations that follows a start will be made with the long sectional cut on the east side of the city,[21] which shows the four Iron Age circuits particularly clearly and so offers the most satisfactory introduction to them. Thereafter the different perimeters are described round to the south and south-west as far as the modern Bayraklı–Bornova Road. Then, returning to Section λ–λ′, the description runs northwards, westwards, and southwards round the other limits of the city. The construction and chronology of the fortifications are reviewed in separate discussions at the end.

II. A DESCRIPTION OF THE EXCAVATED REMAINS

1. SECTION λ–λ′ (Hxxii, Jxxi–xxii)

Originally, the area revealed in this long cut[22] lay outside of the ancient city, which was not extended thus far to the east and south until the building of the first major Iron Age defence system in Middle Geometric times. The limits of the previous city have not been explored in this vicinity, but a little over 50 metres north-west of the λ–λ′ section a deep-level probe in Jxviii–xix proved to lie safely within the Protogeometric and Early Geometric cities as well as their more immediate Bronze Age predecessors. Here there was presented a high occupation platform on top of the original *tell*, which by Middle Geometric times lay well over 5½ metres above modern sea-level—indeed, was then already higher than the level attained in the latest period by occupation inside the wall in the λ–λ′ section. The Protogeometric and Early Geometric ground-levels showed a distinct slope down to the east as though the fortifications of the city were then in a state of disrepair and erosion was taking place as a consequence. Beneath the Protogeometric levels lay well over 7 metres of Monochrome occupation, which extended far down beneath present-day sea-level and in which no less than fourteen separate building levels have been distinguished. Here the floors and ground-levels were normally horizontal,[23] and the most plausible interpretation seems to be that they represent a long sequence of cities built on a flat-topped *tell* with distinct limits that were bounded by and protected from erosion by a sequence of terrace-walls which may themselves quite well have taken the form of fortifications. The courses adopted by these walls have yet to be explored. All that can be said at present is that the full series perhaps as far back as Monochrome Level 1 in Jxviii–xix should be cut by a line between J3.xix and J5.xxi6.

The south and east sides of this earlier *tell* were doubtless originally sea-girt or washed by the estuary of the stream that flows down from the north-east.[24] Gradually, however, land was formed against them by a process of silting. Perhaps silt from the Hermus carried south by currents into the Gulf of Smyrna may have contributed to this, but doubtless the principal factor was the small stream already mentioned, innocuous in summer but capable of torrent proportions in winter. By Middle Geometric times an extensive low platform had been formed in this way, its top being between present-day sea-level and about ¼ m. beneath it, which probably means that it stood between about 1¼ and 1½ m. above the sea-level obtaining in those days.[25] It was formed of great river boulders, such as to this day fill the bed of the stream, and of grey clay. The latter was in thin striations from countless successive deposits. Although below it was virgin, a very small number of sherds occurred in its top few centimetres, suggesting that before the building of the Middle Geometric wall men had come to frequent this newly formed area of land. But there was no evidence of their having yet built or lived on it. To the west sand had blown in over the clay. This contained a greater volume of pottery, but the sherds were so water-worn as to be almost unrecognizable.

---

[19] Sections κ–κ′ and λ–λ′.

[20] *Ancient India* iii. 143, fig. 3.

[21] Section λ–λ′, PLATE 7.

[22] PLATE 7, FIG. 2.

[23] The slope down to the east and south in Monochrome Levels 3–5 (see the forthcoming publication of the prehistoric remains), on the other hand, is an exception which may argue a further period in which the bounds of the *tell* were neglected.

[24] See the plan of the environs of the city, PLATE 1, where it is marked as the 'River Meles', an identification that can probably not be substantiated (p. 23), although it doubtless played no mean role in the life of the earlier city of Smyrna.

The purpose of incorporating this newly silted area in the Middle Geometric fortifications was probably twofold. It enabled the circuit to follow a natural line a short way in from the changed shore, thus denying the newly silted ground as a possible foothold to attackers, and it probably increased the area available for building within the rapidly growing Greek city by a prodigious amount.

This first major Iron Age circuit has, for convenience, been named Wall 1. The lower part of it at this point was constructed partly of mudbrick and partly of stone, the whole wall having a thickness at its base of 4·75 m.[26] The mudbrick was apparently laid first of all, forming a strip 2·1 m. wide of alternating headers and stretchers bonded with clay mortar. The river silt on which it rested appears to have afforded this brick but an insecure foundation, and it has sagged badly in the middle. The mean dimensions of the individual bricks were 0·51 × 0·3 × 0·13 m. and they conformed to a brick standard that seems to have been imposed in Protogeometric times.[27] The bottom of this brick was at about 0·3 m. below sea-level, and it continued up to between 1·8 and 2 m. above sea-level, at which point it had been sheared off in the construction of this circuit's successor, Wall 2. The remaining 2·65 m. across the base of the wall were occupied by a stone outer face foundation and its backing of medium-sized stones, mainly andesite river boulders, extending right up to the mudbrick against which it was packed. These stones were securely bonded together with clay. Patches of carbonized matter occurred on the surface of small clusters of them, possibly representing traces of moss. The present stone outer face of this wall appears to be the product of a rebuilding in the subsequent period and, in its present form, to have served as the underground foundation for the outer face of Wall 2. This seemed clearly shown by the discovery of an early Protocorinthian sherd below sea-level in the foundation trench against this face, and no less by the curiously mixed construction of the face itself.[28] Here large blocks of andesite hammer-dressed to quite a good, crisp surface alternated with smaller river boulders innocent of all dressing. It seems probable that the dressed blocks may have been re-used material from the original face of Wall 1. That this original face followed the same line as its successor seemed assured both by the exactly corresponding orientation of the Wall 1 mudbrick and by the line taken by the clearly marked foundation trench cut in the natural clay at the foot of the face. The latter contained quantities of andesite chips, presumably from the hammer-dressing of the original face. It was 0·4 m. wide at the top and of the depth of the existing face, extending down some 0·85 m. below sea-level. The extant face was preserved to a maximum height of 1·3 m. above sea-level. At 1·1 m. above sea-level there was a change in the texture of the mudbrick debris lying against it.

---

[25] p. 12 n. 13 and p. 61 below. Cf. also p. 68 n. 143.

[26] Because of the batter on its faces it would probably have been distinctly narrower than this at its top.

[27] pp. 102, 121.

[28] PLATE 10*a*.

Above this were scraps of bricks of identifiable Wall 2 dimensions.[29] Below was only an amorphous mass of dissolved brick clay which gave no indication of the limits of the interference occasioned by the rebuilding of the stone face in the Wall 2 period. Nevertheless, it seemed quite probable that this lower brick debris was from Wall 1 and that its top at 1·1 m. above sea-level against the face but sloping down towards the east represented Wall 2 ground-level outside the city. The previous (Wall 1) ground-level at this point should be given by the top of the natural clay at just under modern sea-level against the face but sloping up slightly towards the east. The original Wall 1 face presumably also extended down to around 0·85 below sea-level. It continued up to a minimum height of 2 m. above sea-level, for the Wall 1 stone fill that backed it was preserved to this level against the Wall 1 brick pack. However, I think it probable that this stone construction was limited to the bottom part of the outer face of the wall, where it served as a protection against sapping, and that the whole of the superstructure of the wall was, like the rear part of its foundations, built of solid mudbrick.

In the above description I have taken it that the west face of the brick in the foundations continued up to form the inner face of the wall. Against this west edge of the mudbrick and extending uninterrupted to the west out beyond the area of our probe (i.e. at least over 6¼ m. westwards) was a solid fill of medium-sized river boulders packed about with clay. This has been named the Platform Fill and, so far as it was possible to determine, it was contemporary with the wall itself. It, too, contained localized patches of carbonization like the fill behind the Wall 1 outer face. Like the brick to the east of it, it was founded on the silt and sand washed up by the river. To the west it was preserved in position at least up to 3 m. above sea-level, and dislodged boulders associated with fallen mudbrick suggested that originally it continued still higher. I take it that the purpose of this fill was to extend the high occupation platform of the old *tell*[30] out to meet the new circuit. In other words, this enlargement of the city perimeter brought with it the artificial enlargement of the *tell* itself—a public undertaking of staggering proportions. With the exception of the rebuilt outer face, the whole of this Wall 1 construction appears to fall in Middle Geometric times, though it should be stressed that dating material is not plentiful in an area such as this that had hitherto lain outside the city.[31]

In Late Geometric times this Wall 1 circuit was entirely rebuilt. The chief contribution of the Late Geometric builders was to increase the thickness of the wall enormously,[32] which probably enabled its height to be raised considerably also, the latter circumstance being apparently corroborated by the formidable volume of mudbrick that had fallen from its superstructure. However, in this area the outer face of this wall followed exactly the same line as that of its predecessor, which it simply rebuilt to a much higher level. As a consequence the greater thickness was achieved, not by reclaiming further land from the estuary, but at the expense of the habitable area within the city. For convenience this Late Geometric circuit has been named Wall 2.

A further innovation made by Wall 2 was the introduction of a built stone inner face foundation, presumably designed to protect the mudbrick above from being undermined at its base by rain water. This inner face foundation had a footing that projected 0·3 m. from the line of the face and had itself an almost vertical edge 1·15 m. high. The top of this projecting footing seems certainly to have been exposed.[33] Above it rose the main stone inner face foundation, of which approximately four courses were preserved, standing over 1¾ m. high. It was constructed of hammer-dressed blocks of grey andesite quite well fitted in a rubble style with some

---

[29] See below, pp. 43 and 103.

[30] See above, p. 39. Cf. also pp. 66, 121 n. 13, 122.

[31] On the chronological aspect see also pp. 122 ff.

[32] Here, at a height of 5 m. above sea-level, it was about 8¾ m. thick.

[33] Its possible structural role is considered on p. 114.

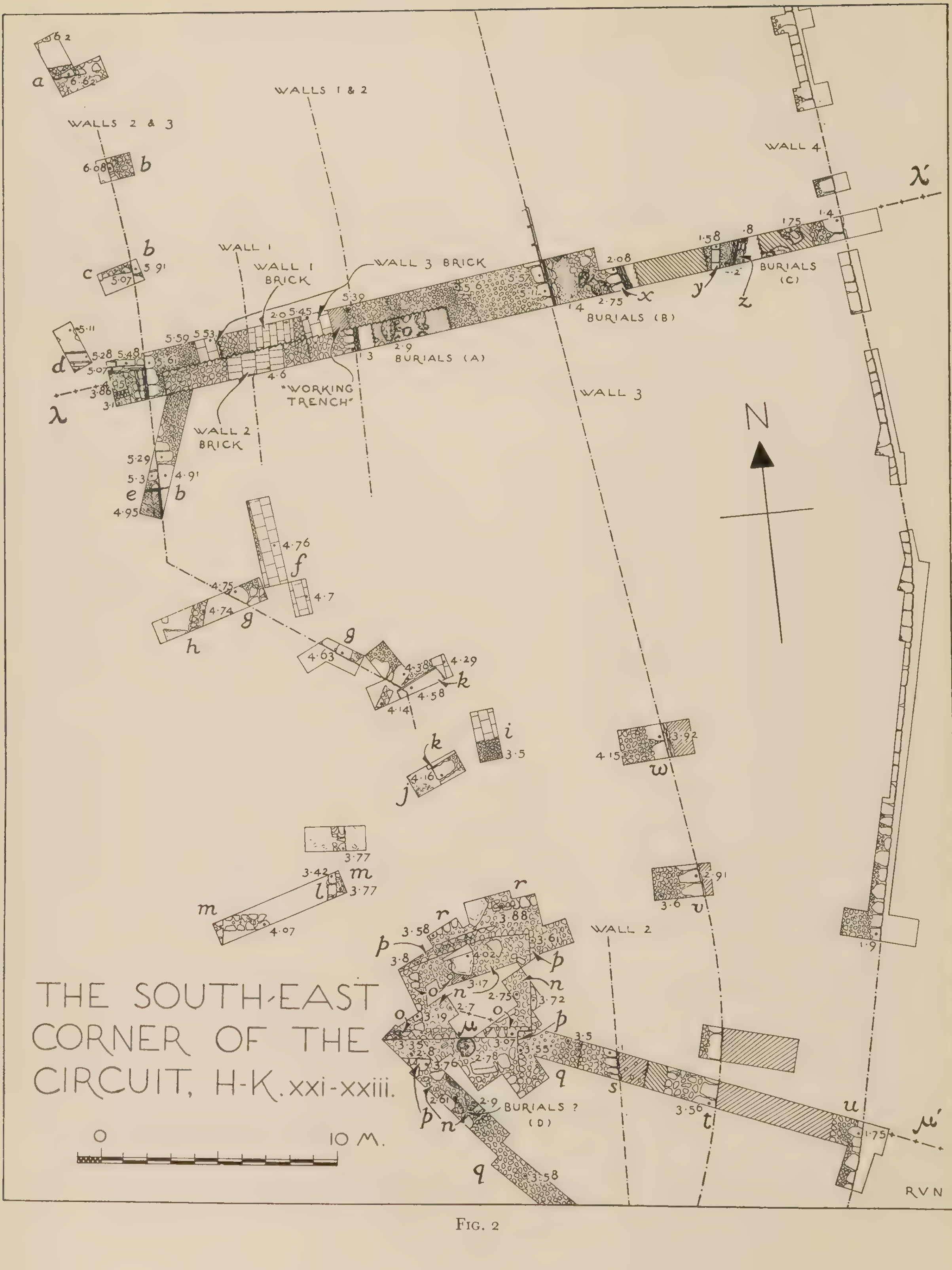

THE SOUTH-EAST CORNER OF THE CIRCUIT, H-K. xxi-xxiii.
0
10 M.
N
WALLS 1 & 2
WALLS 2 & 3
WALL 1
WALL 1 BRICK
WALL 3 BRICK
WALL 2 BRICK
"WORKING TRENCH"
WALL 3
WALL 4
WALL 2
BURIALS (A)
BURIALS (B)
BURIALS (C)
BURIALS ? (D)
λ
λ′
μ
μ′
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z
6·2
6·62
6·08
5·91
5·07
5·11
5·28
5·48
5·07
3·86
3·1
5·59
5·53
5·61
2·0
5·45
5·39
4·6
2·9
1·3
5·6
5·57
5·11
1·4
2·08
2·75
1·58
·8
·2
1·75
1·4
5·29
5·3
4·91
4·95
4·76
4·7
4·75
4·74
4·63
4·38
4·29
4·58
4·14
4·16
3·5
4·15
3·92
3·77
3·42
3·77
4·07
2·91
3·6
1·9
3·58
3·88
3·8
4·02
3·61
3·17
2·75
3·72
2·7
3·19
3·35
2·8
3·76
3·07
3·55
2·78
3·5
2·61
2·9
3·56
1·75
3·58
RVN

Fig. 2

tendencies to Lesbian or polygonal, small stones having been packed in at some of the angles.[34] It showed a marked batter, leaning in some 7° from the vertical. Despite its re-use in the subsequent circuit,[35] the whole of this face as preserved seemed to be of Wall 2 date. It was backed by an extensive fill of medium-sized and largish stones, mostly boulders but a few of them worked blocks. This stone fill extended in to meet the mudbrick of the body of the wall. In the foundations the stone backings of the inner and outer faces have, by their very extent, reduced this to a narrow 'core', at the very bottom little more than $1\frac{1}{4}$ m. wide, though broadening somewhat above. This brick rested on the trimmed remains of that of Wall 1 at 1·8 m. above sea-level and was preserved up to 4·6 m. above sea-level, where it had itself been shorn off to receive the brick of the succeeding wall. The mean dimensions of the bricks themselves were 0·51 × 0·3 × 0·075 m.,[36] and they were laid with clay mortar in alternating courses of headers and stretchers on the same orientation as the faces of the wall and as the Wall 1 brick below. The laying of the inner face stone fill, the brick 'core', and the outer face stone fill clearly progressed upwards *pari passu*, though in the individual stages of this the stone fill behind the inner face seemed to have been put down first, the mudbrick laid against this, and the outer face stone fill then packed in against the brick. The preserved foundations of the stone outer face of this wall have already been described.[37] The stone fill that had originally backed this face was preserved against the east edge of the mudbrick 'core' up to 4·6 m. above sea-level, so that the stone socle of the outer face extended at least up to this level and may even have gone as high as its counterpart under the inner face. The Wall 2 fill behind the face seemed to have been of stones of very diverse sizes. A few of these seem to have been bonded together with the usual clay mortar, but throughout the greater part of the outer face backing at this point sand had been substituted for clay, a circumstance that seems to have contributed catastrophically to the total collapse of the face. Although some parts of the Wall 2 circuit seem to have been completed in the pre-Protocorinthian stage of Late Geometric, it is certain that this portion is of early Protocorinthian date and so cannot be earlier than the third quarter of the eighth century B.C.[38]

It was destroyed by a sudden catastrophe which evidence from other parts of the site[39] suggests was an earthquake occurring around 700 B.C. Section λ–λ′ only contributed the information that the wall was already in a state of collapse in the early seventh century, certainly by the second quarter of that century. The initial collapse probably occupied only seconds but, nevertheless, presents distinct difficulties in interpretation. As we shall see later,[40] immediately south of this section there is the complicating factor that the Wall 2 construction projected much farther to the east, apparently to flank a gate. Further, of the Wall 2 stone fill that originally backed the outer face, only those stones securely bedded into the east edge of the brick 'core' may be regarded as being in their original positions. Perhaps something of this nature happened. The actual tremor may have split off the whole of the outer face down to ground-level and flung it bodily, stone and brick above, well out to the east, and much of the sand-packed stone fill may have gone with it. In the next stage dissolved and fallen mudbrick from the superstructure still standing farther in above the inner face came down over the outer face foundations. This was followed by the debris of further sand-packed masonry, perhaps from some better-preserved part of the outer face to the north and almost certainly from the projecting construction to the south. It may be that certain ashlar blocks of white stone amongst this debris may have been on the stone socle of the latter. Only two of these were found intact, their dimensions being

---

[34] PLATE 10*b* and *c*.

[35] p. 47.

[36] p. 103.

[37] p. 40, PLATE 10*a*.

[38] p. 124. A selective publication of the imported pottery from Corinth is given by J. K. Anderson on pp. 138 ff.

[39] p. 124.

[40] p. 53.

0·53×0·4×0·2 m. and 0·41×0·215×0·15–0·2 m. (the thickness varying). They had polished faces, well-trimmed edges, and undressed backs. Thus, in the early seventh century B.C. the outer face of the wall had vanished and instead a mass of collapsed stonework covered with sand formed a steep slope down to the east. Down on to this was thrown pottery and other rubbish from inside the city.

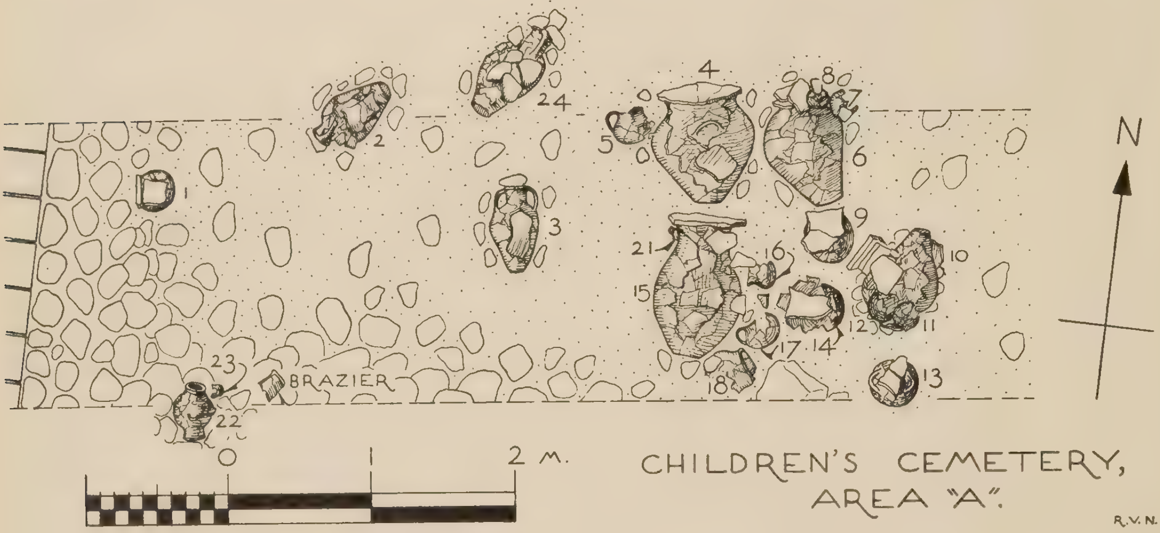


Fig. 3

About the second quarter of the seventh century a curious development occurred. This area of the mouldering fortifications suddenly began to be used as a cemetery apparently exclusively for the interment of babies and young children in a variety of storage jars, amphorae, and cooking pots.[41] The sand stratum already described was particularly favoured for this purpose, and the density of the burials at this point[42] may be gauged from the plan, FIG. 3.[43] On the broader criteria of vase-chronology these burials in the sand stratum can apparently all be considered about contemporary.[44] However, they may be divided stratigraphically into at least two main groups. The sand was covered with strata of charred wood and ash. It was these that gave the stratigraphical division mentioned, and the following list of the 'Area A' burials is arranged in terms of them. All the vases had been crushed to a greater or less extent by the weight of superincumbent debris.

i. *Burials sealed by the main burnt stratum*

(*a*) Burial pot **3**: striped amphora lying on its side, neck to north; belly appeared to have been broken open to receive the body of an infant, but no skeletal remains preserved.

(*b*) Burial pot **9**: large, squat, round-bellied cooking pot with horizontal shoulder handles, fire-blackened exterior; set upright with slight tilt to west and covered with slab of grey slate-like stone. Powdery bone traces, apparently of infant; inside jar above them many carbonized specks.

(*c*) Burial pot **10**: striped amphora lying on its side, toe to north; neck partly broken away in antiquity and resultant hole sealed by piece from the wall of another amphora. Opening made in the upper side of the belly to receive the burial sealed by two fragmentary saddle-querns. Contained the bones of a small child[45] lying on its back with its head to the south; arms flexed at sides; legs doubled up with both knees to right; skull has slipped forward on to chest.

---

[41] PLATE 11*a*, from a photograph by J. M. Cook, shows some of the burials cleared. On the change in child burial customs to which they seem to testify see p. 126 below.

[42] Called 'Area A' on FIG. 2.

[43] The serial numbers shown on FIGS. 3, 4, and 5 are those assigned in the field cataloguing of the child burial vases of the λ–λ' section. To avoid confusion they have been retained here.

[44] However, this does not necessarily imply that this cemetery is the consequence of some single calamity such as a plague. The custom here instituted of burying children on the city perimeter thereafter continued unabated until the site was abandoned in the fourth century B.C.

External offerings **11**: small one-handled cooking pot with fire-blackened exterior set upside-down. Contained carbonized matter, animal bones, and some bones apparently from bird. **12**: similar small one-handled cooking pot, fire-blackened, tilted downwards. Pieces of bone found by it. **13**–**20** coated with a white deposit. **21**: small one-handled cup; broken as a consequence of having been thrown into the grave before the pithos was placed in position, all of its fragments being found scattered immediately beneath the neck of the latter.

(*g*) Burial pot **24**: grey amphora lying on its side with its top to the north-east, tilted slightly downwards and its neck sealed with stones; opening made in belly sealed with pithos fragments. Contained the bones of a young child with its feet to the toe of the amphora, the trunk of the body having folded forward in an arc, the partly crushed skull coming to rest above the pelvis.[47]

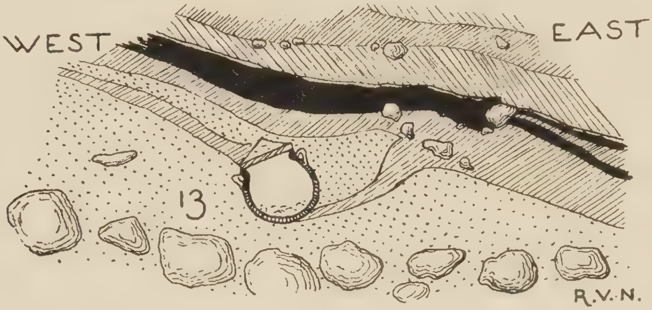


FIG. 4. THE STRATA SEALING THE BURIAL IN CHILDREN'S CEMETERY POT **13**

(*d*) Burial pot **13**: large, squat, round-bellied cooking pot with horizontal shoulder handles (as **9** above), set upright with slight tilt to north; top sealed with chunks of pithos. Contained traces of decayed unformed bone, seemingly of an infant with its head to the west. FIG. 4 shows the west–east section at this burial. Not only does this well illustrate the role of the sealing strata, but also a thin stratum of dissolved mudbrick in the sand may indicate the approximate limits of the hole scooped out to take the burial. The shallow depth at which this was made is noteworthy and apparently usual.

(*e*) Burial pot **14**: large, squat, round-bellied cooking pot with horizontal shoulder handles (as **9** and **13** above); fire-blackened exterior; set upright with slight tilt to south; top sealed with white stone pithos lid. Contained remains of the ill-formed bones of an infant with its skull to the west (and presumably lying on its back) and one small milk tooth; traces of right arm and right leg preserved, both doubled up.

(*f*) Burial pot **15**: tall pithos lying on its side with its mouth to the north sealed by a white stone pithos lid. Contained the bones of a half-grown child,[46] its head to the north, lying on its back in an extended position but with the left leg and both arms somewhat flexed; skull crushed down on to chest and upper part of spine also dragged out of position.

External offerings **16, 17,** and **18**: small, fragmentary, one-handled cooking pots like **11** and **12** above, all lying on their sides, **17** and **18** with fire-blackened exteriors. **16** and **17** had no identifiable contents, but the interior of **18** was

Internal offerings: a faïence scarab and a piece of worked tusk, both inside the amphora.

ii. *Burials later than the main burnt stratum but sealed by the upper burnt stratum*

(*h*) Burial pot **2**: grey amphora lying on its side with its neck to the south-west, pointing somewhat downwards, and sealed with a stone; sealed on the side with a chunk of pithos, presumably where it had been broken open to receive the body; badly crushed. Contained the jumbled bones of a small child.

(*i*) Burial pot **4**: broad, high-shouldered storage jar with shoulder handles, lying on its side but tilted slightly upwards, its neck to the north sealed with an oval white stone pithos lid. It contained the bones of a young child, its head to the north, lying on its back with its arms flexed at its sides and its legs doubled up into a crouched position. The skull had been crushed down on to the left shoulder.

External offering **5**: small one-handled cooking pot (cf. **11–12, 16–18** above) lying on its side, its top to the north. Contained a few animal bones.

(*j*) Burial pot **6**: neckless grey amphora (the neck had been broken off in antiquity and the hole was here sealed with a large piece of pithos) lying on its side with its top to the north. It contained the well-preserved skeleton of a young child[48] with its head to the north, lying on its back with its arms slightly flexed at its sides and its legs doubled up to the left.

---

[45] PLATE 11*b*.

[46] PLATE 11*c*.

[47] PLATE 11*d*, where it was necessary to insert a strut to support the skull.

[48] PLATE 11*e*.

External offerings **7** and **8**: two small one-handled cooking pots like **11–12** and **16–18** above. **7** lay upside-down and contained a large sea-shell. **8** stood upright and was sealed by pieces of pithos. It contained one bone.

iii. *Burials not sealed by the burnt strata*

(*k*) Burial pot **1**: large cooking pot set upright and covered with fragments of a white stone pithos lid. Badly crushed. Contained the jumbled bones of a small child.

(*l*) Burial pot **22**: amphora with side handles and elaborate painted orientalizing decoration, consisting of cable patterns and panels of spirals with birds under the handles, lying on its side with its neck to the south, tilted somewhat downwards. Contained the bones of a young child mainly jumbled in the neck to which they had gravitated, though some had spilled outside, as the mouth of the vase was only partly sealed by a stone.

External offering **23**: small one-handled cooking pot like **7–8, 11–12, 16–18** above. No identifiable contents.

The date of these last two burials in relation to the remainder is less clear. It is also uncertain whether the burnt strata had any direct connexion with the burials with which they were associated. However, it seems probable that the small cooking pots placed beside the burial vases in a number of the graves[49] may have contained food offerings, and it is possible that these may have been cooked near the graveside as part of a funerary banquet. The discovery of a terracotta brazier at this point[50] may be not without significance. However, the fire-blackening of the exteriors of many of these small 'food offering' pots[51] may arise from previous use, as is surely the case with two of the much larger cooking pots,[52] in which burials were actually made!

There was apparently nothing to suggest that any of these graves were later than the middle years of the seventh century B.C. Over the period in which the burials were made and in the years that followed, what survived of the Wall 2 mudbrick superstructure to the west above the inner face seems gradually to have been eroded away and carried down to the east by the rains, sealing the burials with a sequence of strata of dissolved and fallen brick. All the while household refuse was being thrown away over the crumbling wall with the consequence that this debris above the graves constituted a stratified rubbish-tip ranging in date from the middle to the last quarter of the seventh century.

This Wall 2 debris probably originally extended far out to the east, its easterly part having been obliterated by later building. Early in the last quarter of the seventh century a stone face was built, presumably revetting its eastern edge (FIG. 2, *x*) a little under 12 metres east of where the Wall 2 outer face had once been. The bottom of the foundations of this new face was at about 0·37 m. below modern sea-level, and the face itself was found preserved to a height of 2·45 m. It showed a pronounced batter and, though solidly constructed, its masonry was of such diverse quality as to suggest that much use had been made of the fallen Wall 2 material.[53] Also, the face blocks and boulders behind and revetted by this face, where they had not been removed in the building of Wall 3, seemed to have found their way into their present positions around the beginning of the seventh century. Associated with these were quantities of sand. Where this material had been cut through by the Wall 3 foundations[54] it produced fragments of human bone and of pottery contemporary with the burials farther west. Further sand occurred on top of the natural clay outside the face under discussion, and its westerly edge outlined the foundation trench cut in the building of this wall. Material from this foundation trench showed that the face itself could not have been constructed any earlier than the last quarter of the seventh century. That it was no later was shown by the facts that it was anterior to Wall 3 and that its face was completely buried before the end of the seventh century. The very different orientation that this revetment showed, as compared with the Wall 2 faces, may have been determined by the run of the easterly edge of the mass of Wall 2 debris swinging out much farther to the south-east as a consequence of the projecting construction to the south.[55]

---

[49] Burials *c*, *f*, *i*, *j*, and *l*.

[50] See FIG. 3.

[51] Pots **7, 8, 11, 12, 17,** and **18**.

[52] Pots **9** (Burial *b*) and **14** (Burial *e*).

[53] PLATE 12*b*.

[54] p. 48. See also PLATE 7.

[55] pp. 52 f.

About 4½ m. east of this face was found a free-standing wall 0·45 m. wide on a markedly different orientation (FIG. 2, *z*). This was built directly on to the natural clay washed up by the river.[56] Its east face, pronouncedly coarser than its west one, was in the small-stone Lesbianish masonry common in seventh-century house-walls and rested on a massive projecting footing. The construction of the west face (preserved almost a metre high) is, in this period, I think, unique.[57] Possibly the andesite ashlar blocks were re-used material, but the effect aimed at seems undeniably decorative. Extending up to this west face was a cobbled pavement at 0·2 m. below modern sea-level, and the wall may have been a kind of balustrade flanking this. The whole of this construction too, it emerged, could not be earlier than the last quarter of the seventh century and it too was buried in the late seventh century B.C. The purpose of these structures is as puzzling as their lives were short. No signs of either construction were found in any other area and it seems likely that both were localized to this part of the site.[58] As we shall see later,[59] there seems to have been a gate in the Wall 2 circuit immediately south of this cut, and this presumably represented a convenient point for gaining access to the estuary anchorage from the city. This terracing of the edge of the mound of Wall 2 debris might have been done with a view to bringing a road up over the top of it into the city. In any case the venture was abandoned with the building of the late-seventh-century fortifications in this area; and such of these anterior constructions as were not plundered at the time were buried under the great quantities of spoil dug out to make way for the outer foundations of that circuit. This spoil consisted almost entirely of dissolved and fallen mudbrick that must originally have come down from the Wall 2 superstructure.

The name of Wall 3 has been assigned to the circuit of the late seventh century B.C. The dating material from its fill confirmed the evidence of the lattermost strata of Wall 2 debris under it and of the superseded structures to the east, which showed that the part of it in the λ-λ′ section was not constructed until the years immediately preceding the Lydian capture of the city. It followed a different line from Walls 1 and 2, this being largely dictated by the new edge to the *tell* created by the Wall 2 debris. However, it did not have its outer face as far to the east as the previous wall revetting this debris; instead, it ploughed through it to a considerable extent. In this area the Wall 2 inner face foundation was re-used to carry the inner face of Wall 3, and any brick fall that had come down over it from the Wall 2 superstructure must have been cleared away at this time. As a consequence, in this area the inner and outer faces of Wall 3 were not parallel with each other and the wall itself attained a thickness of just under 18 metres on the section line, increasing to almost 19 metres a little to the south. The whole of this width supported a mudbrick superstructure, though it seems quite possible that only the outer half of this was carried up to any great height.

To the east of the inner face such of the Wall 2 stone backing as had fallen away was replaced by a pack of small river stones like those also used behind the Wall 3 outer face. Against this fill was laid a broad mudbrick 'core', the mean dimensions of the individual bricks being 0·57 × 0·44 × 0·09 m. They were laid in alternating courses of headers and stretchers oriented by the line of the Wall 3 outer face. Between 0·7 and 0·8 m. from the west edge of the stone backing of the outer face this laid mudbrick came to a stop on an almost vertical line. The stone fill was carefully packed in clay mortar up to its vertical west edge, and apparently this gap of 0·7 to 0·8 m. was deliberately left to provide a temporary working space. It was thereafter filled with brick clay, being probably too narrow to take laid mudbrick, but the courses of mudbrick above extended right across it.

---

[56] Cf. pp. 39 f. above.

[57] PLATE 12*a*.

[58] Their dating and orientation seem quite to preclude the possibility that they had any connexion with the earlier projecting Wall 2 construction to the south (p. 53).

[59] pp. 52 f.

The stone backing behind the outer face consisted of small river stones and had a width of about 8½ m., though only the easternmost 3½ m. extended down to the full depth of the face. The stone outer face socle itself was a massive construction of hammer-dressed grey andesite, preserved to a height of over 5 m. The highest course preserved was in finely dressed stonework.[60] Below, the masonry approximated more to Lesbian, but the dressing and fitting grew progressively coarser all the way down. From about 4 down to about 1½ m. above sea-level this more careless work seems to have been botched over by a liberal plastering with clay mortar. But below that the clay mortar ceased, as also did the hammer-dressing, the face continuing in huge unshaped boulders. A broad pit dug into the fallen stones and sand of Wall 2 to receive these foundations was lined with quantities of andesite chippings from the dressing of the face above.

Where ground-level outside this face fell is uncertain. It may have been as low as the top of a soil stratum overlying the sand between 1·8 and 2 m. above sea-level. Above this were two deep strata of dissolved mudbrick. The lower of these might be either debris from the Wall 3 superstructure or further remains of Wall 2 packed in over the coarser part of the Wall 3 face to form a kind of earth glacis; the upper stratum certainly consisted of brick that had fallen from the Wall 3 superstructure, and clearly had not come down until the early sixth century B.C. Conflicting evidence on the subject was suggested by the child burials outside the wall face (FIG. 2, area 'B')[61] and a mudbrick wall farther to the east (FIG. 2, *y*).[62] The area 'B' burials were as follows:

(*m*) Burial pot **19**: striped amphora lying on its side. Presumed to have contained the body of an infant of which no skeletal remains survived. (Illustrated on p. 16, FIG. 4.)

(*n*) Burial pot **20**: large pithos lying on its side, neck to north-west. Contained the jumbled bones of an adolescent.

(*o*) Debris from disturbed burials, **25**: fragments of an amphora. **26**: fragments of a pithos with incised decoration. **27**: miniature oinochoe, virtually complete.

The striped amphora **19** (*m* above) is very like those found in the destruction stratum of the Lydian capture of the city, but this resemblance probably does not preclude the possibility that the burial may date from the early sixth-century reoccupation of Smyrna. The oinochoe **27** (*o* above) can also be paralleled in the destruction material, but it seems certain that none of the *o* vases can have found their way here until the sixth century.[63]

The mudbrick wall (FIG. 2, *y*) rested on a footing of a single course of broad irregular stones. Above this some nine courses of mudbrick were preserved *in situ*. None of the material found in conjunction with this wall suggested a date later than the late seventh century B.C. On the other hand, no large 'occupation' or 'use' sherds were found with it at all and it seems unlikely to have been a house-wall. Perhaps it bounded an enclosure or formed part of a boat-shed or similar construction. The curious thing about it was that the size of the bricks of which it was built (0·45 × 0·3 × 0·08 m.) seemed unattested in the second half of the seventh century, but was known in the reoccupation of the site in the early sixth century B.C.[64]

---

[60] PLATE 12*c* and *d*. The photograph showing the upper part of the face (PLATE 12*d*) belongs to an earlier stage in the excavations, the topmost preserved course having been removed by stone-plunderers in 1949. In the small area excavated the masonry seemed to approximate more or less to ashlar. However, the Miltners who cleared a great deal more of this course (*ÖJh* xxvii *Beiblatt* 162 ff., figs. 82–83), much of which no longer survives, saw it clearly as polygonal. It was stepped back slightly (between 0·07 and 0·12 m. according to the Miltners) from the face of the wall below. Of the smaller masonry that they described above it we found no trace. Presumably, whether in stepped ashlar blocks, as to the north (pp. 66 ff.), or in polygonal levelled off with smaller masonry, as here retailed by the Miltners, the effect was doubtless much the same of achieving a level stepped-back crowning to the socle. One may question, however, whether the smaller masonry might not be of subsequent date.

[61] The position of these burials is also indicated on the section (λ–λ′, PLATE 7), the pithos, *n* (the amphora, *m*, was just beside it), at around 2½ m., and the vase fragments, *o*, at about 4 m. above sea-level. The amphora found by the Miltners just outside the wall face in this area (op. cit. 165 n. 49) is perhaps also to be interpreted as a burial vase.

[62] On the section (PLATE 7) the burials have been labelled 'post-sack' and the wall 'late seventh-century'. It is probably safer to regard the exact date of both as uncertain.

[63] A complicating factor in this regard is that the limits of the Miltners' trench cannot be detected in the dissolved mudbrick at this point. However, it seems doubtful if they dug even as deep as this mudbrick debris just here. Certainly, of the *o* vases, the almost complete oinochoe must be below the bottom of their probe.

If the lower ground-level outside the Wall 3 face be accepted, the difficulty of the coarse construction of the lower part of the face raises itself; if the higher one,[65] then it is necessary to cope with the complication of an excessive depth of foundation underground. Either way, the situation at this point was exceptional in that this was precisely where the Wall 3 outer face first ran into the great mass of debris from the projecting Wall 2 construction just to the south of the λ–λ′ section.[66]

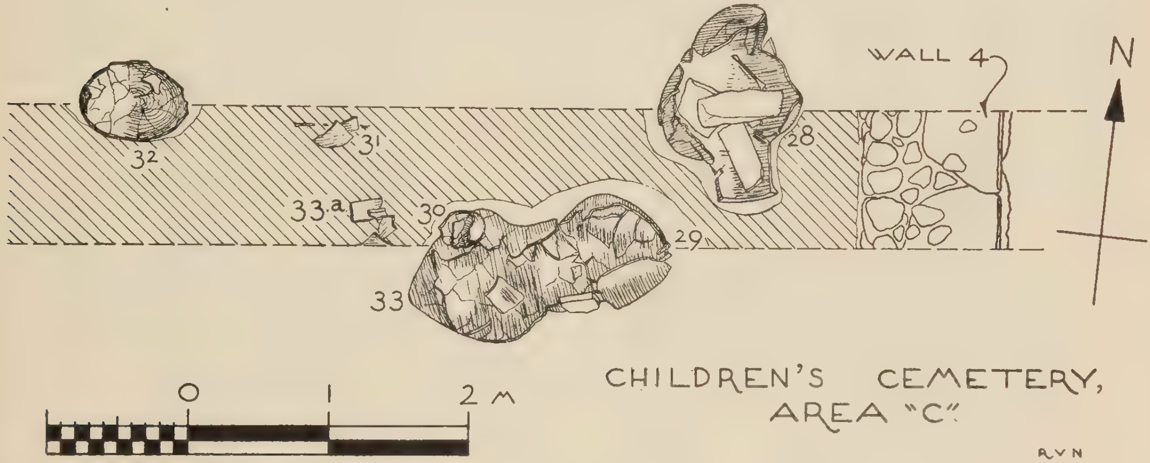


Fig. 5

Over the sixth century the mudbrick superstructure of Wall 3 crumbled away, and successive strata of dissolved and fallen mudbrick were washed down to the east, where ground-level rose considerably as a consequence. At a stage when this process seems to have been already complete more child burials were made in the area to the east of the previous ones.[67] The modern terracing of the edge of the *tell* and subsequent cultivation have taken a heavy toll of these graves, which lie close under the present surface. The area 'C' burials uncovered were as follows:

(*p*) Burial pot **28**: very large pithos lying on its side with its neck to the south; belly crushed by stones and disturbed by ploughing. Contained thighbone, ribs, and cranium, apparently of an adolescent.

(*q*) Burial pot **33**: very large pithos lying on its side with its neck to the east. Contained the bones of a half-grown child lying on its back with its head to the east; legs apparently flexed.

(*r*) Burial pot **29**: pithos with its neck to the west. Later than *q*, down on to which it has been crushed. Badly disturbed. No bones survived.

(*s*) Burial pot **32**: lower part of a storage jar. Contained one bone fragment.

(*t*) Hopelessly disturbed and fragmentary vases **30**: fragments of an amphora, perhaps standing vertically. **31**: amphora fragments. Scattered bones in vicinity. **33***a*: pithos fragments, possibly from **33**.

---

[64] p. 103 below.

[65] The Miltners (op. cit. 162–6) apparently interpreted the projection of the socle face below the crowning as being similar to the projection sometimes found at the foundation of Lesbian and polygonal walls (e.g. *Larisa am Hermos* i. pls. 3*b*, 33) which, before being applied to such more monumental work, seems to have been developed from the protruding footing of house-walls (cf. pp. 93 and 98 and PLATE 20*c*). But here we have to deal with a far deeper type of construction. Also, however the question of ground-level outside the face be resolved, it is at least clear that a considerable part of the projecting face below was exposed down into the sixth century B.C.

[66] p. 53.

[67] FIG. 2 (where marked area 'C') and FIG. 5.

Until these coarse vases have been assembled and studied it will not be possible to date them adequately. They appear, however, to be of classical type.

To the last of the Iron Age circuits has been assigned the name Wall 4. Of this, all that survived at this point was the foundation for a stone outer face preserved less than 1½ m. high with a thin backing of stone fill behind it, the whole having a thickness of only about 1·3 m. The face was of large hammer-dressed andesite blocks fitted in a rubble polygonal style, and its foundation trench contained quantities of chips. When the wall was built, ground-level against its face was at 1·1 m. above modern sea-level, but sloping down steadily towards the east. The date of the construction of Wall 4 is uncertain but probably falls in the fourth century B.C.[68] The only significant dating material from Section λ–λ′ consisted of the area 'C' burials just described. These presumably antedated Wall 4 and were originally sealed by its fill extending in to the edge of the *tell*, though all remains of this fill have since been swept bodily away in the modern terracing of the site.

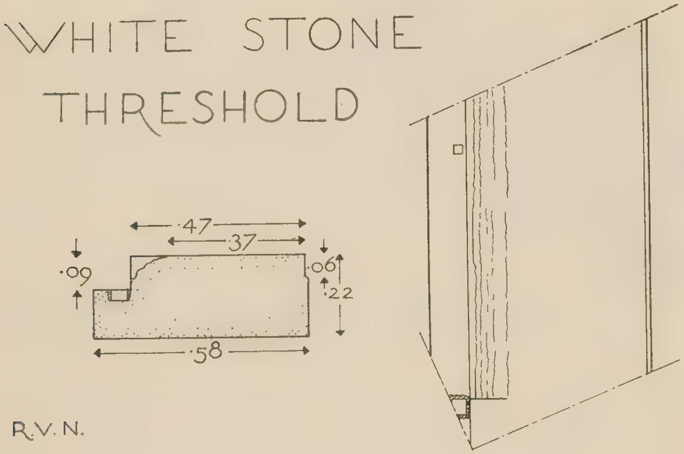


Fig. 6

It remains to record what happened after the seventh century B.C. to the west of the inner face of Walls 2 and 3. Here two closely superimposed occupation levels with the foundations of house-walls succeeded each other in the sixth century B.C.[69] Then, in the fourth century B.C., a massive wall running east–west (FIG. 2, *d*) was built right up to the old city wall's inner face. This fourth-century wall had a projecting andesite foundation, 1·1 m. deep on its south side. The south face of this andesite substructure[70] was the more carelessly fitted, the north one being of well-jointed ashlar blocks with convex faces. Of the superstructure of the wall only one course of white stone ashlar masonry survived. It was to be observed that these white stone blocks had been re-used, and the same may also apply to the white stone threshold farther to the west (FIG. 6). This had been carefully dressed with the adze, but not polished. Possibly the doors swung in whatever member was attached by the square dowels. If the smaller dowel hole is centrally placed, then the jambs must have been over 1·3 m. apart. The quality and massiveness of this structure suggested that it was something more than a private house. Its function if so, however, has yet to be established.[71] When the city was abandoned in the third quarter of the fourth century B.C., ground-level both to the north and to the south of this wall was at the top of its andesite footing where it was marked by quantities of tile.

FIG. 7 gives simplified reconstructions of the possible appearance of Walls 1–4 in the vicinity of Section λ–λ′. It is, however, to be observed that many uncertainties remain[72] and that some of the structural problems may admit of quite different interpretations.[73]

---

[68] The dating evidence as a whole is considered on pp. 135 f.

[69] PLATE 10*b bottom right*. These walls are marked with the levels 4·05 and 3·86 on the plan, FIG. 2.

[70] PLATE 7 (where it is shown in elevation), PLATE 10*b left*.

[71] More of this structure may have been uncovered to the south at FIG. 2, *e*. See below.

[72] e.g. the west edge of the Wall 1 Platform Fill has yet to be excavated.

[73] e.g. see p. 114.

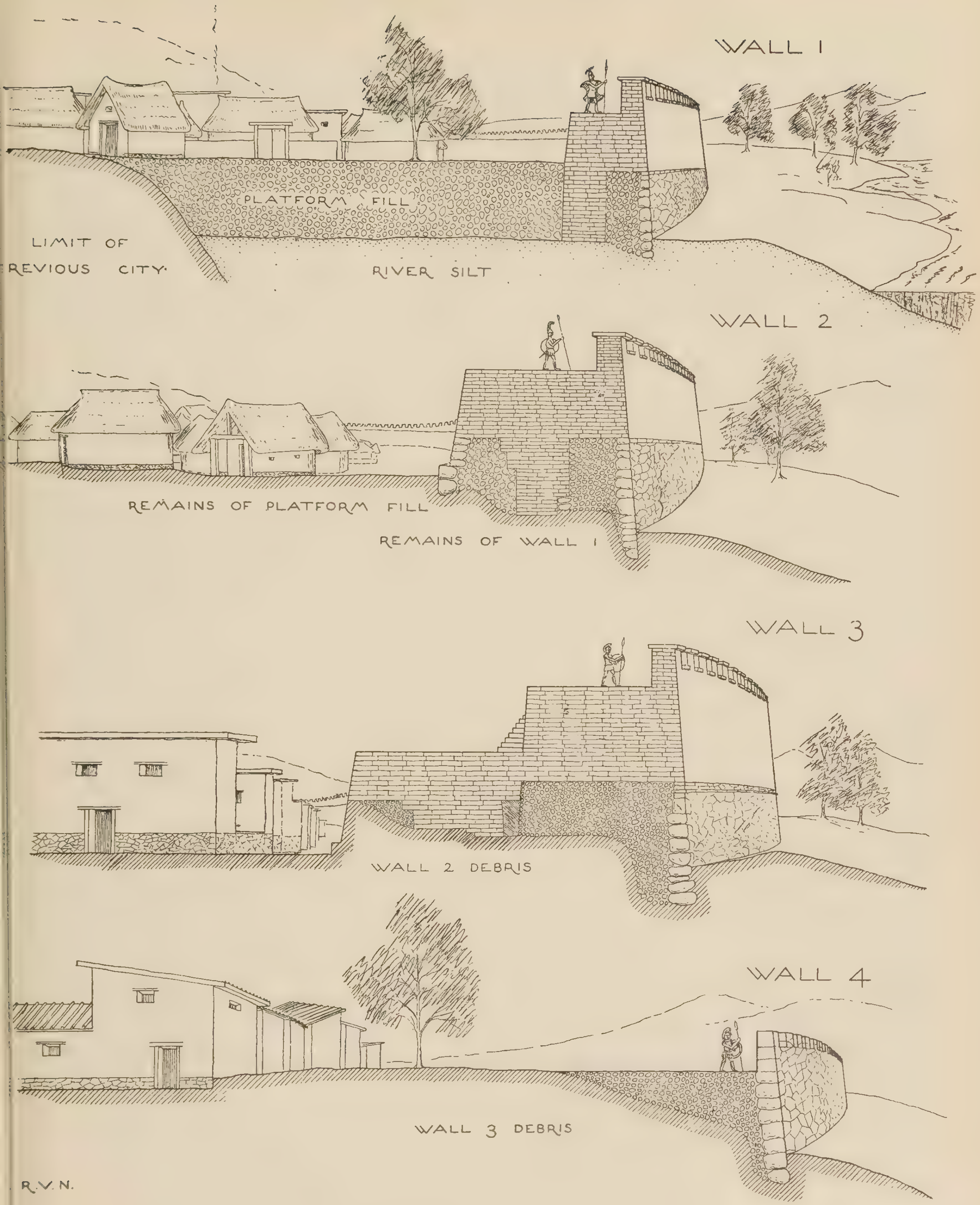

WALL 1
LIMIT OF
REVIOUS CITY
PLATFORM FILL
RIVER SILT
WALL 2
REMAINS OF PLATFORM FILL
REMAINS OF WALL 1
WALL 3
WALL 2 DEBRIS
WALL 4
WALL 3 DEBRIS
R.V.N.

Fig. 7. A simplified interpretation of the sequence of fortifications in the λ–λ' section

2. FROM SECTION λ–λ′ SOUTH TO SECTION μ–μ′ (Jxxi–Hxxii—Kxxii–xxiii)

South of Section λ–λ′ the outer face of Wall 3 continued in the straight line traced by the Miltners in 1930[74] and relocated by our probes (FIG. 2, *w* and *v*). Beyond, it curved round to the south-west (FIG. 2, *t*). As the Miltners discovered in their probes to the south, the face had become much shallower and somewhat coarser in construction. Indeed, by the time it had reached the point FIG. 2, *t*, it had its very bottom at 2·35 m. above sea-level. Also, as a consequence of the severe erosion of the whole of the south of the city, the total height to which the face was preserved was here only about 1·2 m. It seems that the profitless venture of ploughing through the increasingly dense mass of Wall 2 debris was abandoned and instead the foundations were allowed to run up over the top of it. However, it appears clear that this shallower construction to the south must be either the original Wall 3 outer face or else, less probably, a subsequent rebuilding of it.[75]

The inner face of Walls 2 and 3 (FIG. 2, *b*) continued on the same line some 7 metres south of Section λ–λ′. Abutting on it at right angles was a well-built wall 0·7 m. thick, its exposed north face being constructed of regularly shaped ashlar blocks of andesite. Against its south face and the inner face of the city wall had been built a cement-lined trough or basin (FIG. 2, *e*),[76] apparently consisting of an earlier phase, when it was lined with a thin coating of pink cement, and a later one, in which the bottom of the basin was raised, when it was lined with a heavy layer of pebbly white cement (4–5 cm. thick). In the vertical walls of the latter were incorporated fragments of classical roof tiles. Such a construction suggests a post-classical date, but in fact the whole was sealed with classical tiles and only fourth-century B.C. pottery was found in association with it. Probably it formed part of the same classical structure as that of which massive traces were observed farther to the north.[77]

Thereafter the Wall 3 inner face swung round to the south-east through an angle of about 45°. The face was now of massive andesite blocks fitted after a Lesbian fashion (FIG. 2, *g*) and it seemed to have formed an integral part of Wall 3 whose brick (FIG. 2, *f*) extended right up to it. But its footings were fairly shallow[78] and it seems unlikely to be any earlier than the construction of Wall 3. Some of the blocks used in this face seemed to have been dressed down from massive squared masonry such as that found farther to the south-east and to be described shortly. South of it were found the remains of a house of the fourth century B.C. (FIG. 2, *h*) and, farther to the south-east,[79] part of a house-wall perhaps of the later fifth century B.C.

At the east end of this return (FIG. 2, *g*) the inner face of Wall 3 seems to have swung round to the south to run parallel with the outer one, giving a wall with a thickness of approximately 10 metres. Of this face only a few blocks immediately south of the return seemed to be in position, but several large pieces of masonry that must originally have formed part of it had, at a subsequent date, been piled higgledy-piggledy above it and continued, in a disjointed fashion, to the south. Most remarkable amongst these were two giant rectangular blocks of andesite with fine adze-dressed surfaces (FIG. 2, *k*). The more northerly of these[80] was 0·6 m. thick, over 0·65 m. wide,[81] and preserved to a length of 1·9 m., although, as both ends were broken away, its original length might have been considerably greater. I can only account for these blocks as having originally formed the lintel of a massive gate. As fragments of such blocks were actually found built into the Wall 3 face at this point and as the two large blocks themselves appear likely to have suffered a similar fate, the construction of which they originally formed part was apparently demolished before the building of Wall 3.[82] Directly antedating the present displacement of the more southerly of these squared blocks was a mass of debris, apparently from iron-working, consisting of fragments of burnt mudbrick[83] and quantities of iron bloom. This was not closely datable, but contained fragments of a pithos rendered almost unrecognizable by exposure to extreme heat but apparently of sixth-century type.

---

[74] op. cit. 162 ff.

[75] The dating of the shallower part of the face at the south-east corner is much confused by plunder pits, some of them perhaps ancient and some certainly modern. See also p. 127 below.

[76] PLATE 13*a*.

[77] FIG. 2, *d*, p. 50 above.

[78] At 3·4 to 3·7 m. above sea-level towards the south-east.

[79] On FIG. 2 marked with the level 4·14.

[80] PLATE 13 *b* (viewed from the west).

[81] Its full width was not cleared.

To the east, in the interior of the wall, the Wall 3 mudbrick 'core' appeared to have continued southwards for a space. It rested directly on a stone fill of earlier date (FIG. 2, *i*) which was probably a better-preserved continuation of the Wall 2 fill found farther to the south (FIG. 2, *n*).[84] To the west of the circuit wall inside the city, remains of two successive levels of classical houses (FIG. 2, *m*) overlay faint traces of an archaic structure (FIG. 2, *l*).

To the far east Wall 4 continued straight on some 12 metres south of Section λ–λ'. It then curved round somewhat towards the south-west, converging pronouncedly on Wall 3. The construction continued in the same rubble polygonal, but became somewhat coarser beyond this first bend. Some 26 metres farther on (FIG. 2, *u*) it curved round yet farther to the south-west, following the bend in the Wall 3 face.

The remaining details in this area (FIG. 2, *n–u*) are best explained by reference to Section μ–μ' (FIG. 8) which runs across them. It is first of all noteworthy that the earliest wall apparently met with in this cut was Wall 2 and that we have as yet no evidence that the projecting Wall 2 construction that we have now to describe had a Wall 1 predecessor. Quite a good volume of dating material suggested that this part of Wall 2 was built in the pre-Protocorinthian stage of Late Geometric and so should be somewhat earlier than the stretch to the north in Section λ–λ'. The stone outer face foundation (FIG. 2, *s*) seems to have been bedded on the natural clay washed up by the river. Behind, the socle appeared to have been of stone fill throughout, without a brick 'core'.

It will be observed that the Wall 2 outer face in Section μ–μ' was approximately parallel with its counterpart in Section λ–λ' but lay considerably farther east. Yet both were part of the same circuit. It is, of course, possible that this may so have woven about as to incorporate both in a single wall-line. But when one visualizes this simplest solution, as may be done on the plan of the *tell*,[85] it becomes manifest how improbable it is. The best alternative seems to be that the Wall 2 line extending south from Section λ–λ' and its counterpart running north from Section μ–μ' both kept straight on and did not meet at all, but overlapped the one outside the other. This I take to have been the case. The purpose of this overlapping was probably to shield the gate whose massive lintel blocks were being re-used in the Wall 3 period.[86] The erratic course of the Wall 3 inner face is probably also to be explained by the circumstance that it had to enclose the standing remains of this structure.

In Section μ–μ' the stone socle of the Wall 2 outer face has collapsed almost to ground-level as a consequence of the earthquake postulated around 700 B.C.,[87] and the mudbrick superstructure that once stood above it has been flung down outside it. Much of this brick was still in the vast coherent masses in which it had come down at the time of the earthquake. The measurements of the individual bricks corresponded with those of Wall 2 in Section λ–λ'.[88] Once again the material did not afford a secure date for the actual collapse, but the latest of the dissolved

---

[82] p. 52 above.

[83] Their thickness was about 0·09 m.

[84] pp. 53 ff.

[85] PLATE 74, J-Kxxi–xxii.

[86] pp. 52 f. above.

[87] p. 124. Cf. also p. 43 above.

[88] p. 43. Cf. p. 103.

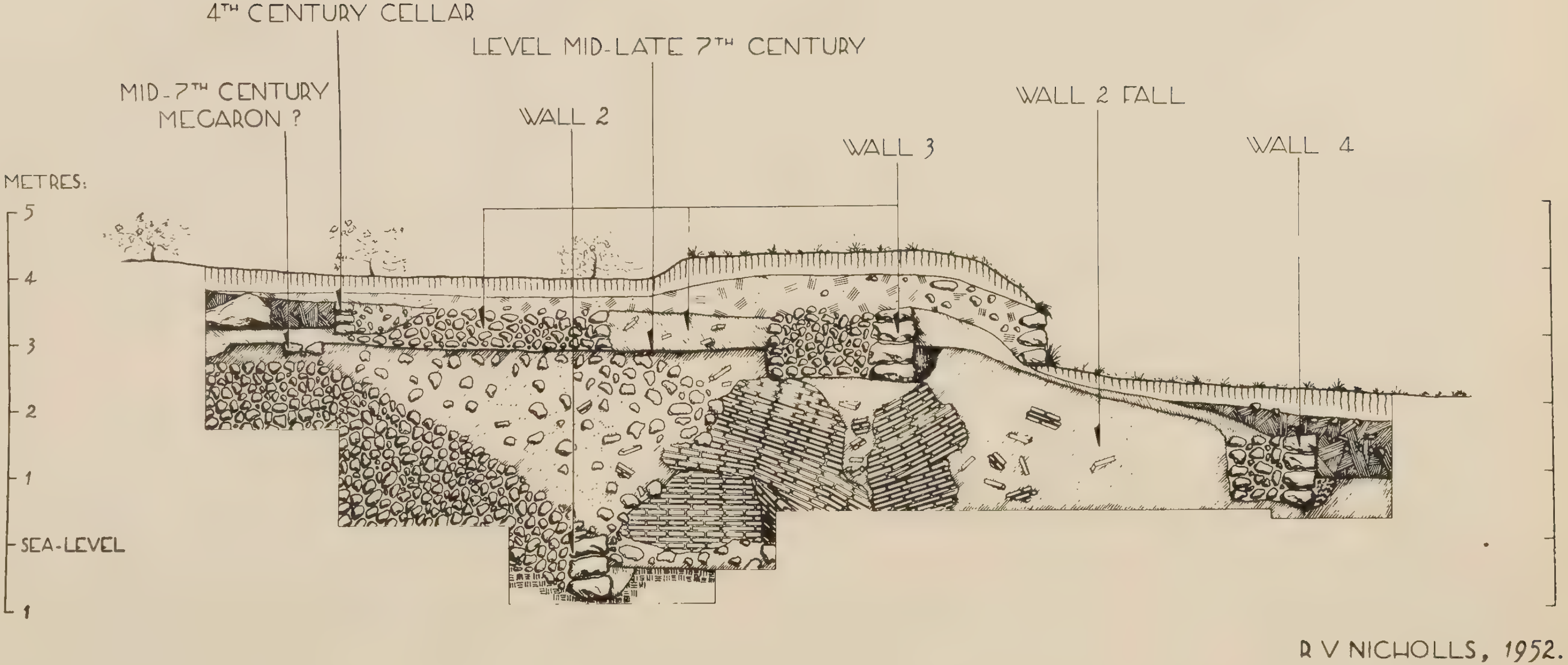

4TH CENTURY CELLAR
LEVEL MID-LATE 7TH CENTURY
MID-7TH CENTURY MEGARON ?
WALL 2
WALL 2 FALL
WALL 3
WALL 4
METRES:
5
4
3
2
1
SEA-LEVEL
1
R V NICHOLLS, 1952.

FIG. 8. SECTION μ–μ'

mudbrick, covering that which fell initially, appears to have come down in the early seventh century.

Over the western part of the area, such of the Wall 2 stone fill as had survived in place (FIG. 2, *n*) now became covered with a layer of dissolved mudbrick. On top of this was built a house (FIG. 2, *o*, FIG. 9). Of this we seemed to have the foundations of the west and south walls bounding a large rectangular room and a further room beyond it to the west. Sunken into the floor of the large easterly room was found the stone base for a wooden column, 0·25 m. in diameter.[89] Most probably there was originally at least one more internal column in this room which may have been a kind of megaron of a type amply attested in the seventh century by recent finds in Chios,[90] but rare in Smyrna.[91] The floor of the house consisted of the levelled mudbrick debris of Wall 2. It was uncertain whether an area of this by the column base[92] that had been burnt hard by fire represented a hearth or some mischance following the abandonment of the building. The house's construction was not closely dated. It must, of course, have been later than the earthquake, but its building may fall quite early in the seventh century. The period of 'use' pottery left on its floor when the house was abandoned was of the middle of the century. Meantime, around the second quarter of the century, the mudbrick debris over the Wall 2 stone fill to the south of the house seems to have received child burials (FIG. 2, area 'D'). At least, here were found two pithoi and a splendid orientalizing amphora[93] together with scattered bones all hopelessly crushed under the later Wall 3 stone fill.

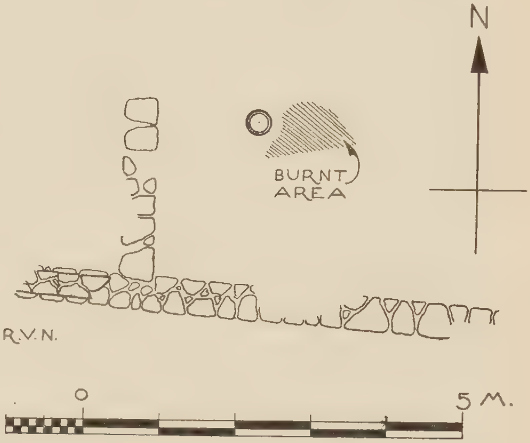


FIG. 9. REMAINS OF A SEVENTH-CENTURY HOUSE, PERHAPS OF MEGARON TYPE

Section μ-μ' presented a graphic picture of the wholesale erosion obtaining at the south of the city. Of the long period from the abandonment of the house just described to the desertion of the site in the fourth century B.C. only 60 to 80 cm. of deposit survived. Here Wall 3 was erected on top of the Wall 2 debris at some time after the abandonment of this seventh-century house, presumably in the late seventh century B.C.[94] Behind its outer face, already described,[95] was a backing of small river stones $2\frac{1}{4}$ m. wide. Piled against this to the west were about 2·4 m. of dissolved and broken mudbrick, presumably Wall 2 debris dug out to make way for the foundations of the Wall 3 outer face. Presumably a laid mudbrick 'core' like that farther to the north[96] went above this, but it was no longer here preserved. West of this again was further stone fill (FIG. 2, *q*) which probably originally extended right up to the Wall 3 inner face. This face was no longer preserved, although the scattering of large andesite face-blocks associated with the succeeding levels[97] continued on down to the south. Some had even found their way into the fourth-century 'cellar' to be described below, but perhaps only after its abandonment.

---

[89] PLATE 13 *c* and *d*. The reader is also referred to the forthcoming publication of similar pieces from the temple area at Old Smyrna.

[90] *JHS Archaeological Reports* 1954, 21; *BCH* lxxix. 288.

[91] The Smyrna material is to be assembled in dealing with the column bases from the temple area mentioned above. So far as domestic architecture is concerned, it seems that houses of this 'megaron-type' were beyond the means of the ordinary eighth-century B.C. citizenry living in their thatched mud huts, but perhaps rather austere and simple for the tastes of their expansive seventh-century descendants. But such Smyrna examples as do occur seem to be of the seventh century B.C.

[92] FIG. 9; PLATE 13 *d*.

[93] *JHS* lxx. 13, fig. 8.

[94] Cf. p. 52 n. 75 above, p. 127 below.

[95] p. 52.

[96] pp. 47, 52 f.

[97] pp. 52 f.

In the fourth century B.C. further building occurred in the area directly above the seventh-century house (FIG. 2, *p*). The description of this structure as a 'cellar' (FIG. 8) is something of an exaggeration; but its floor was definitely sunken below the ground-level obtaining at the time which, to judge from contemporary wall footings preserved to the north (FIG. 2, *r*), was a little above the present preserved top of the Wall 3 stone fill. The east wall of this building and the more easterly part of its north wall had no outer faces and simply revetted the edge of the Wall 3 fill. In the southern part of this fourth-century building stood a large pithos, partly buried beneath the floor and partly standing above it.

The outer face of Wall 4 (FIG. 2, *u*) showed much the same construction as in Section λ–λ′[98] and a similar narrow backing of stone fill. Its foundation trench contained andesite chips from the dressing of the face and fragments of classical tile, together with a few early fourth-century sherds. Ground-level outside this face was at 0·8 m. above modern sea-level.

3. South-west of Section μ–μ′ in the Vicinity of the Fountain-House (Kxxii–xxiii—Mxxii–xxiii)

To the south of Section μ–μ′ the outer face of Wall 2 probably continued straight on for a space, passing out beyond the line later followed by its Wall 3 successor, and then curved round to the south-west. The details of this course have not been explored, save that part of it appears to have been cleared by F. and H. Miltner.[99] However, its outer face has been picked up again farther to the south-west (FIG. 10, *r*). This face had its footing below 0·42 m. beneath modern sea level, which was as far down as it was possible to pursue it. It was of large hammer-dressed andesite blocks fitted in a rough polygonal style, efficient rather than beautiful in appearance. It had a backing of smaller stones and behind this again lay a mudbrick 'core' which has been located at a number of points (FIG. 10, *e*, *f*, *l*, *m*, *n*). The bricks were of the same dimensions as the Wall 2 mudbrick in Section λ–λ′[100] and, to the south at least, seemed to be oriented to the outer face of the wall.

At *e* and *f* in FIG. 10 it will be seen that there is a conflict in the orientation of this brick that has yet to be explained. Farther to the north-west at *d* was found a solid pack of mudbrick of different type. Here the mean dimensions of the individual bricks were 0·57×0·3×0·13 m. which, apart from the greater length, tally closely with those of Wall 1 in Section λ–λ.′[101] This brick yielded no dating material and remains, for the present, an isolated phenomenon. It was noteworthy that, if Wall 1 continued straight south from Section λ–λ′ without developing a gate, it would reach precisely this point and have approximately this orientation. But why, if so, it should break off so abruptly admits of no ready explanation. The brick of Wall 2 dimensions at *e* appeared to have taken its orientation from this brick pack. Further, a stone fill, *g*, was laid up against the preserved south edge of the thicker brick. This fill was later than the Wall 2 brick, which continued beneath it but might well antedate the building of Wall 3, belonging in that case to some intermediate construction of the seventh century. It had a curved north-east edge which had the appearance of having been the backing for a wall face. If so, the face itself must have been plundered in the building of Wall 3, since the curved fill was found merely to shade off imperceptibly into the Wall 3 fill.

---

[98] p. 50.

[99] Op. cit. 166–7, fig. 84. A completely certain identification of these wall traces is not possible from the Miltners' photograph. Presumably the main wall-line traced, their *eigentliche Mauerflucht*, is that of Wall 3 (or a subsequent rebuilding of it—cf. n. 94 above). It is uncertain whether the wall in front of it is the very top of Wall 2 passing on its wider circuit out beyond Wall 3 or Wall 4 built at this point very close in to Wall 3 or whether, indeed, the Miltners did not in fact uncover faint traces of all three walls. If they came upon part of Wall 4 here it would suggest that the negative evidence for the continuance of that wall adduced at FIG. 10, *z* may be due to subsequent plundering or failure to probe far enough in to the west (cf. p. 64). Unfortunately, the point shown in this photograph has not been relocated by excavation and, in view of the uncertainties obtaining and their wider implications, the Miltners' plan is not detailed enough to permit its plotting on our own plan of the *tell* (PLATE 74) independently of that.

[100] p. 43. Width and thickness corresponded throughout, but a length of 0·57 as well as that of 0·51 m. occurred, e.g. behind the fountain-house at FIG. 10, *l*. See also p. 103, and p. 105 n. 108.

[101] p. 40. Cf. also pp. 102 and 105.

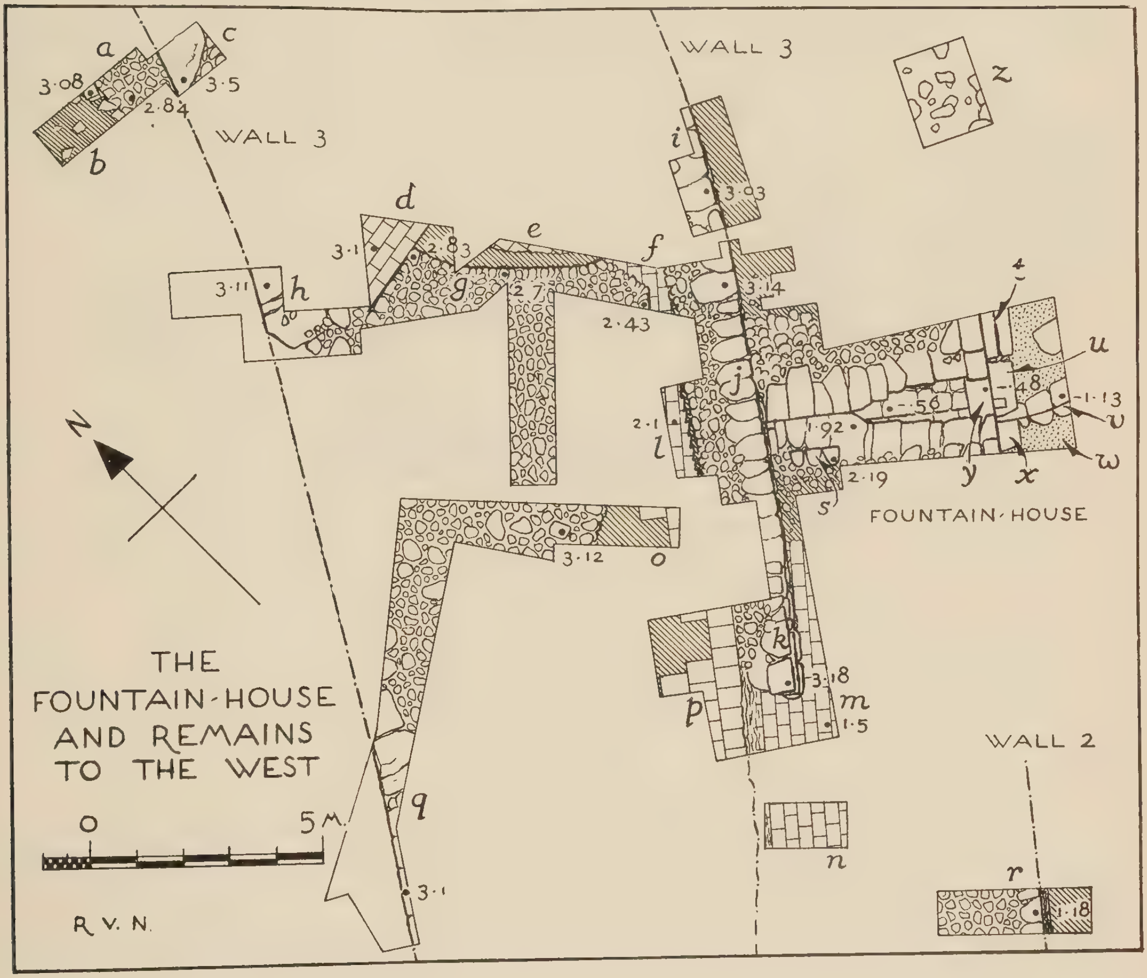


FIG. 10

Beyond, at *a*, there occurred a mass of river stones, apparently representing the Wall 2 stone fill observed farther to the north (FIG. 2, *n*),[102] though here somewhat dislodged and none of them certainly in position. These stones were covered with dissolved and fallen mudbrick, on top of which there had been a fire that had completely baked the upper surface of the brick towards the west (*b*) and covered the whole area with a stratum of ash. This burnt deposit sealed a pure seventh-century stratum in which the inner face of Wall 3 (*c*) was deeply bedded.

---

[102] pp. 53 ff.

This inner face as it now emerged (*c*, *h*, *q*) after its eclipse to the north[103] was of very large, evenly hammer-dressed, grey andesite blocks regularly fitted in a good Lesbian style and showing a pronounced batter. This heavy dressed masonry had no footing course under it, a circumstance rather suggesting that these fine face-blocks may have been re-used material, possibly taken from Wall 2. To the east of *h* and *q* the stone fill backing this face was very extensive, though this may have been partly the consequence of complications arising from the unexplained curved fill, *g*.[104] Apart from this stone fill and the earlier brick at *d* which stood to a considerable height, the interior of the wall consisted of Wall 2 brick debris, above which there seemed to be traces of an incipient Wall 3 brick 'core' (*o* and *p*). The Wall 3 outer face continued in the same rather shallow-footed construction (*i*, *j*, *k*) observed farther to the north.[105] It was constructed of massive blocks of grey andesite fitted mainly after a rubble Lesbian fashion. However, towards the south there was a tendency for horizontal courses of roughly squared masonry to be introduced. Another feature was the deliberate stepping back of the successive courses, thereby obtaining the effect of a batter with blocks dressed roughly vertical. Such a feature was to be observed at the very top of the Wall 3 outer face in Section λ–λ′[106] and occurred sporadically, but not as a consistent structural feature, in the rubble Lesbian masonry to the south of this. But at FIG. 10, *k* it had become a regular element in the construction.[107] To the south-west of *k* the Wall 3 outer face was no longer preserved and all that survived of it was the trench dug by the plunderers who had removed it. The preservation of the face at *k*, however, seemed to have been by their deliberate choice, the stub of the wall face being at this point trimmed off to an approximately vertical edge.

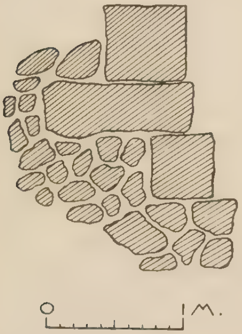


FIG. 11. SECTION OF THE MASONRY OF THE WALL 3 OUTER FACE ON THE NORTH-WEST EDGE OF THE PLUNDER TRENCH

The description of the fountain-house to the east has been reserved for a separate section (4) which follows immediately below. Under this head will also be considered the vexed question of the Wall 4 line in this area.

4. THE FOUNTAIN-HOUSE (Lxxiii)

This small, corbel-vaulted, all-stone structure is better preserved than any other building yet found in the city of Old Smyrna. The dating of its original construction, however, raises some difficulties, though these, as we shall see later,[108] seem not incapable of being resolved. The basic facts are these: it is later than the collapse of Wall 2, for it cut through the debris and standing remains of that wall; but it is earlier than the construction of the Wall 3 outer face which was built on top of the north-west end of it. In other words, unless the present Wall 3 outer face represents a subsequent rebuilding, the fountain-house should be a construction of the seventh century B.C. On the other hand, the 'period of use' pottery found in the draw-basin and overflow channel was, apart from a very faint representation in the late sixth and earlier fifth centuries, almost entirely of the last quarter of the fifth and the first half of the fourth centuries B.C. and the fountain-house was certainly in use in classical times.

The principle on which it operated seems to have been a very simple one. In antiquity, as today, the water-table inside the *tell* must have been distinctly higher than the level of the sea outside. This circumstance seems to have obtained even just inside the edges of the *tell*, perhaps as a consequence of the impervious crust formed by the standing and fallen mudbrick of successive fortifications. It may be that originally a natural spring found its way out at this point through the debris of Wall 2 and flowed into the sea to the east, thus affording the inspiration for the building of the fountain-house itself. The elaborate overflow arrangements[109] seem, in any case, to have been intended not just to carry off a mere seasonal surplus but to ensure a permanent year-round flow of water through the draw-basin so that the whole functioned as a fountain, not as a well or cistern.

---

[103] pp. 52 ff.

[104] p. 57 above.

[105] pp. 52, 55.

[106] p. 48 n. 60. See also pp. 98 f

[107] See FIG. 11, which shows the wall face in section at the edge of the plunder trench.

[108] p. 61.

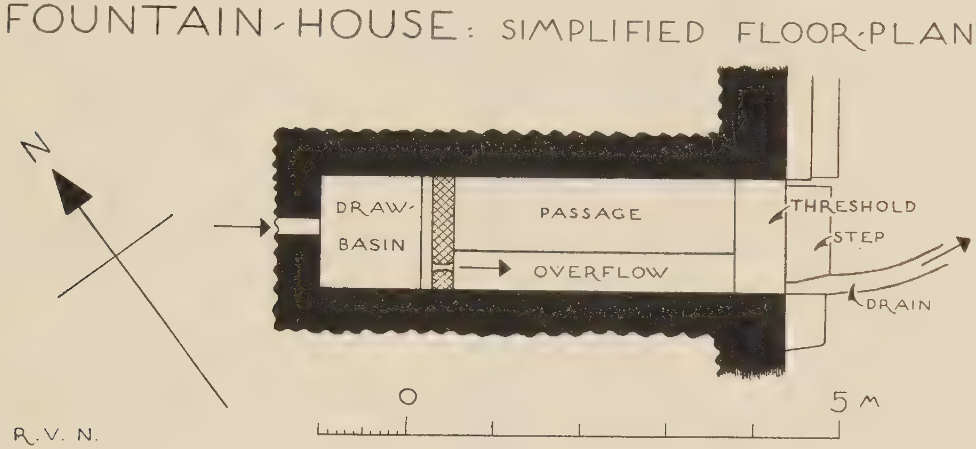


FIG. 12

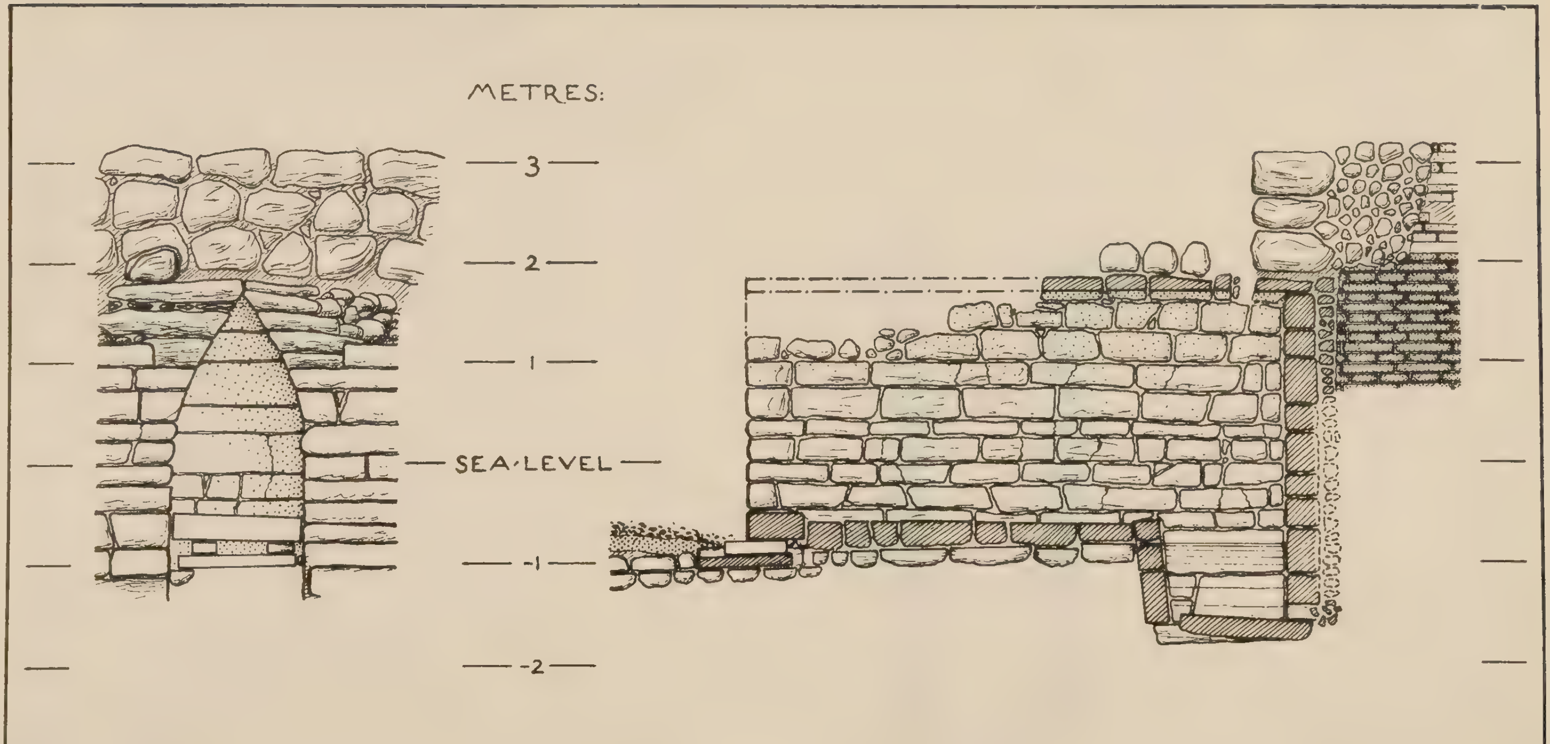
The stone of which the fountain-house was constructed was grey andesite. It had been built in a great trench cut through the debris outside of Wall 2 and continuing right on in through the face and much of the brick 'core' of that wall.[110] In the bottom of this was laid the floor of the draw-basin, and above it was built the wall sealing the north-west end of the chamber. This was constructed from what was to be the interior of the building, the Wall 2 mudbrick on the other side of it being disturbed to a minimum. Such gap as there was between the face-blocks and this brick was filled with small stones and andesite chips. The vaulted side walls were built against this end wall. They seem to have been no less deeply founded, not only at the draw-basin, whose south-east edge was bonded into them, but all the way out to, and including, the south-east façade of the building. The floors of the passage and overflow channel were set at much higher levels and did not bond into these side walls at all. This depth of foundation was clearly to carry the weight of the vault, but it is to be observed that it involved working at a considerable depth under water, even in antiquity, and we may only surmise that these side walls may have rested on a wooden raft to prevent their subsiding in the slime.[111] The much greater depth of water over the building today precluded the investigation of this aspect of its construction. The erection of these side walls wrought much wider havoc in the remains of Wall 2. Here, behind the face-blocks, the disturbed area was filled with river stones and dissolved mudbrick.

---

[109] FIG. 12, p. 61.

[110] See FIGS. 10, 13.

[111] For such a wooden raft under the stone walls of a classical well at Smyrna see p. 11 n. 13.


METRES:
3
2
1
SEA·LEVEL
-1
-2

FOUNTAIN HOUSE: FRONT AND LONGITUDINAL ELEVATIONS

R.V.N.

Fig. 13

Across the entrance to the chamber was set a great andesite threshold block (FIG. 10, *y*, FIG. 12). There seemed little doubt that this had originally rested directly on the step below (FIG. 10, *u*, FIG. 12) and had its top level with the floor of the passage. As it was found, however, it had been raised and canted over at an angle[112] by the insertion of two blocks of unequal size between it and the step.[113] It seems that we are dealing with a botched repair. Apparently at some stage the narrow original channel under the threshold between the edge of the step and the side of the chamber must have got blocked up, with the consequence that the fountain-house became stagnant and somewhat flooded. To rectify this, the threshold was raised and tilted to one side to leave a large clear gap for the water. The original ground-level outside the fountain-house was given by the top of the edging of the drain (FIG. 10, *v*, FIG. 12) and an associated stratum of sandy clay (FIG. 10, *w*) at about 0·9 m. below modern sea-level. Over this had blown a considerable quantity of pure sand, presumably from the nearby seashore. On top of this again lay a thick layer of sherds much comminuted by continual trampling, but nearly all of the second half of the seventh century. It was this sherd stratum that represented ground-level at the time of the raising of the threshold. It seemed clear that this layer was unpierced. It would appear that when the stagnant and flooded fountain was put in order again the accumulation of slime and broken vases inside it was cleared away and flung outside the building. In other words, its construction and original period of use would seem to have fallen in the seventh century B.C. The date at which it was brought into use a second time is more obscure, being quite possibly as early as the sixth century and clearly before the last quarter of the fifth century B.C.

The water entered the draw-basin through a triangular opening 0·19 m. wide and 0·17 m. high in the bottom of the north-west wall of the building (FIG. 14). Behind this opening were quantities of chips and gravel, possibly more of the packing between the face-blocks and the mudbrick,[114] but perhaps denser and serving as a filter. Thereafter, the water passed through a round hole pierced near the south-east corner of the draw-basin out into the overflow channel. A dark stain round the walls showed that water-level in the draw-basin fell not at the bottom of this outlet hole but at about its middle—a circumstance that seemed to be explained by the fact that the first paving slab of the overflow channel had been raised to this level against the far side of the opening. It may have been prised up with the aid of a crowbar, the next slab beyond becoming depressed in the process and so forming a slight hollow apparently favoured for the filling of small vases in the later period.[115]

It is to be observed that the level of the water in the draw-basin seems to have been a matter of some calculation. Probably the object was to ensure a regular flow without unnecessary wastage and, if this is the case, then water-level in the basin, which was measured at 0·76 m. below modern sea-level,[116] should be very slightly below minimum summer ground-water level at the time. When this last adjustment to the water-level was made we cannot certainly tell, but the fountain-house was still operating at this level when it was abandoned in the fourth century B.C.[117]

From the overflow channel the water passed under the threshold into an open drain which presumably carried it on its way down towards the sea. At the start of this drain (FIG. 12) its north edge was formed by the step already mentioned (FIG. 10, *u*) and its south edge by a further low step (FIG. 10, *x*) set against the façade of the building. A corresponding step or bench in two levels was set against the façade at the other side of the entrance (FIG. 10, *t*). Beyond the step, *u*, the north edge of the drain had been removed apparently before the second period of use of the fountain-house.

---

[112] PLATE 15 *a*.

[113] FIG. 13.

[114] p. 59. A view of the draw-basin from the passage is shown in PLATE 15 *b*.

[115] PLATE 14*b*. For the purpose of this photograph the water-level has been lowered to approximately that obtaining in antiquity.

[116] With the important proviso that our own establishment of modern sea level falls far short of perfection (p. 3).

[117] The normal modern ground-water level in this area in summer is between 0·9 m. and a metre above sea-level, but it may drop considerably in the autumn, the lowest I have recorded being around 0·6 m. above sea-level in September. See further p. 12 on the progressive rise in sea-level from the second millennium B.C. to the present day at Old Smyrna and comparable phenomena elsewhere.

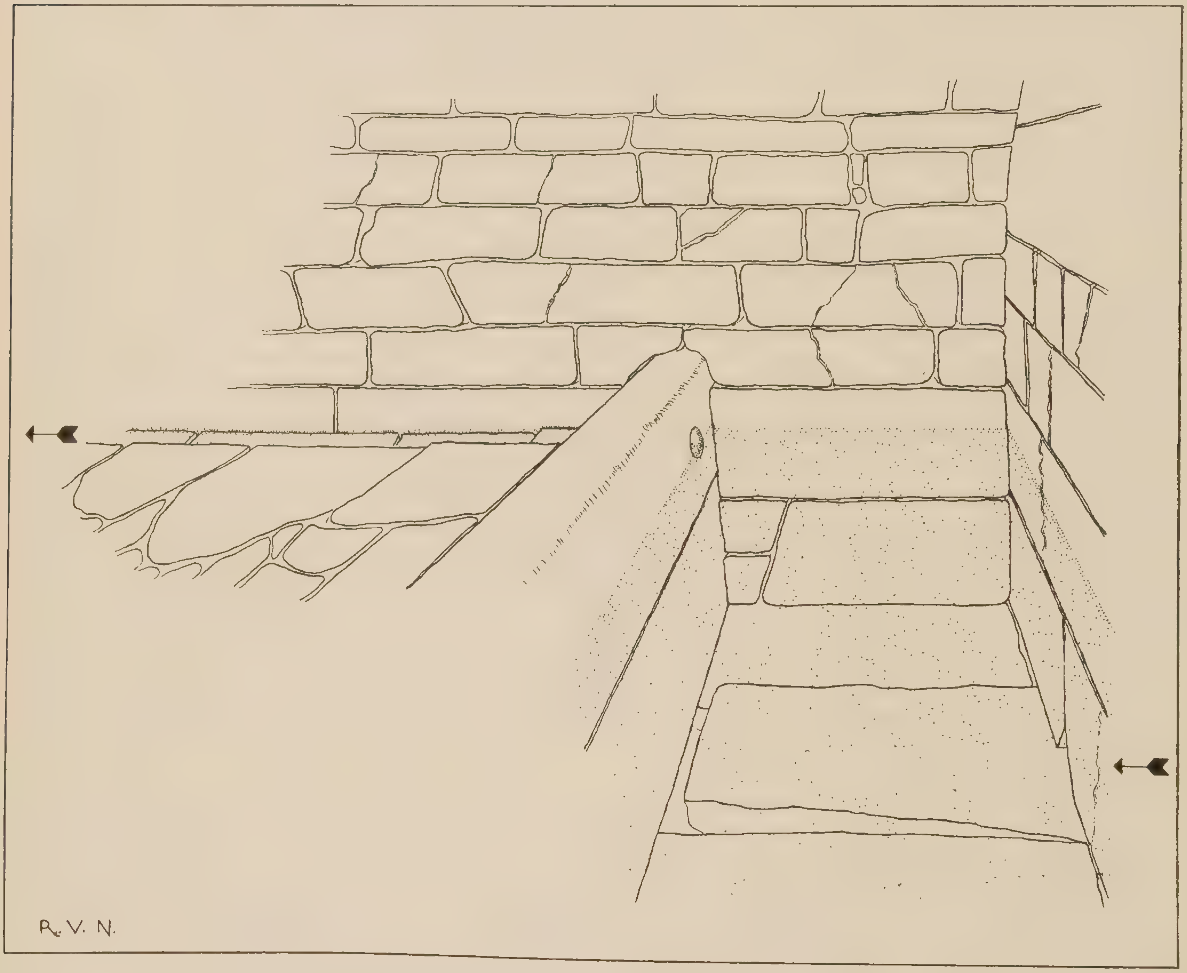


FIG. 14. THE FOUNTAIN-HOUSE: THE DRAW-BASIN

To the south of the fountain-house (FIG. 10, *r*) the mudbrick fall outside the face of Wall 2[118] seems to have been cleared away almost to sea-level in the seventh century, and this circumstance may have had something to do with access to the fountain-house itself. But towards the end of that century this wall was completely buried in a fill of earth containing quantities of occupation pottery. Doubtless it constituted dead ground that could not be adequately covered from Wall 3. The fountain-house itself, however, may have been left open.

---

[118] p. 56.

In the late fifth and early fourth centuries B.C. it saw extensive use. By this time perhaps even a nymph had taken up residence and six tiny votive cups dropped intact into the draw-basin may have been to do her honour. Pots were filled and occasionally broken, and children played knucklebones in the vaulted chamber.[119]

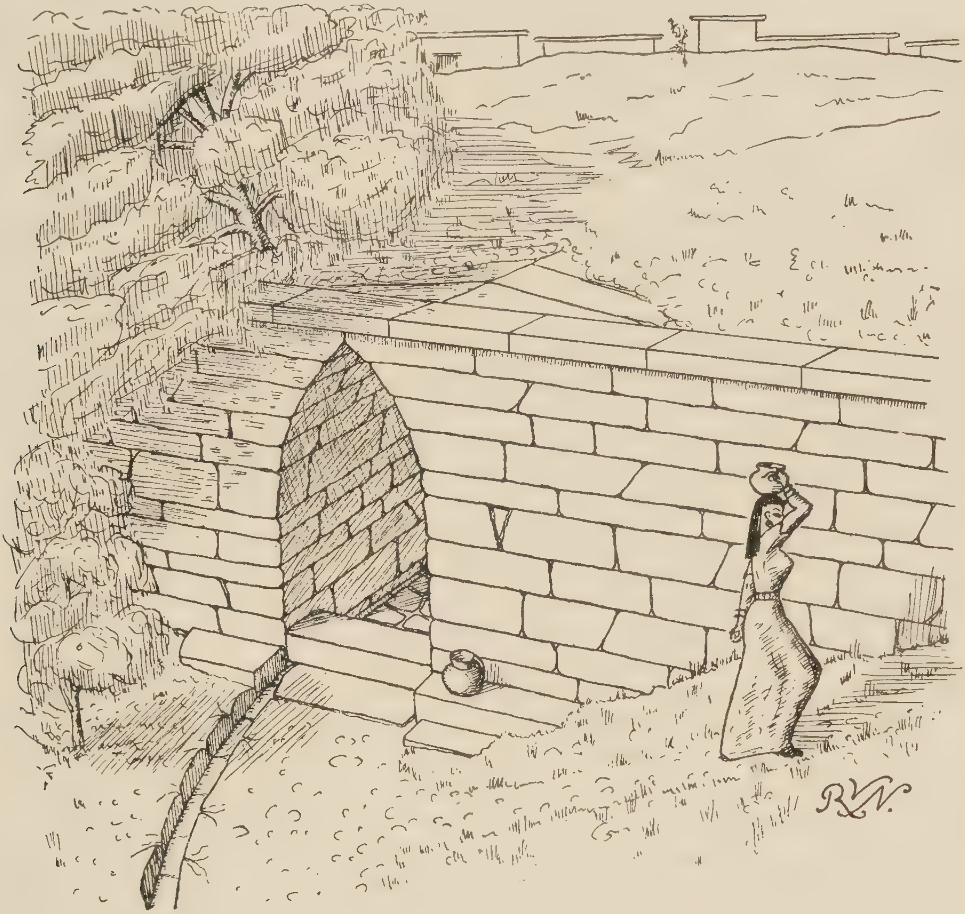


FIG. 15. THE FOUNTAIN-HOUSE RESTORED

The building had not passed unscathed. Many of its wall blocks had been cracked, especially where there were joints in the adjacent courses,[120] suggesting that the damage may have been the product of earthquakes. Subsidence had tilted up one of the floor slabs of the draw-basin. But there was nothing to show that the efficiency of the fountain had been in any way impaired. Around the middle of the fourth century it was suddenly filled in, a mid-fourth-century cup-kotyle fragment being found on its floor whilst an almost complete wine-jar of the type current in the middle years of the century occurred almost at the top of the fill.[121] The plundering of the outer part of the top of the vault may also have occurred at this time. A possible interpretation is that this may have been done to make way for the foundations of a massive wall that seems originally to have run across the top of the fountain-house some way back from its façade and to which probably belonged the scattered large polygonal face-blocks that had fallen outside the fountain-house on top of the fourth-century fill to the south-east.[122] Nothing survived of this wall in position beyond what may have been a Roman plunder pit. If it was in fact Wall 4, then its probable course at this point, combined with the apparent findings of F. and H. Miltner[123] to the north, suggests that it may have followed a line a little farther in to the west, e.g. as suggested on the plan of the *tell*,[124] and south of the fountain-house may have ridden up over the top of the standing remains of Wall 2. A scrap of house-wall (FIG. 10, *s*) on top of the vault of the fountain-house was of unknown date.

---

[119] I take it that the knucklebones were not also dedications from the fact that they were found scattered in the overflow channel as well as in the draw-basin.

[120] FIGS. 13, 14.

[121] The fill seems to have been a simultaneous one antedating the abandonment of the city, though not by many years.

The construction of the fountain-house commands comparison with the so-called 'Tomb of Tantalus' above the cemetery to the north of the city and presumably dating to the sixth century B.C.[125] The corbelled chamber of this structure showed much better fitted masonry than that of the fountain-house, and its vault seems to have been less narrow and pinched.[126] Fragments of white stone slabs found outside the façade of the fountain-house may have formed part of a coping course in contrasting stone that went above it. The courses of the masonry of the façade may have continued horizontal (as perhaps throughout in the 'Tantalus grave') and not have developed the upward tilt shown by the vaulting behind. A restoration of the original appearance of the building on these assumptions is given in FIG. 15. However, it is to be observed that the area explored is very small and that we have as yet no definite information about the access-way down from the city to the fountain-house.

5. From the Vicinity of the Fountain-House South-west to the Modern Bayrakli–Bornova Road (Mxxii–xxiii—Pxxii–xxiii)

The outer face of Wall 2 was located again at N1.xxiii7[127] in the same construction of large hammer-dressed polygonal blocks of andesite. Traces of further stone fill above it may have belonged to Wall 4. Beyond this point Wall 2 probably curved round gradually to the north-west,[128] but its precise course is not known.

The inner face of Wall 3 continued in the same heavy Lesbian masonry, still without a footing, through M2.xxiii1 and N1.xxiii. At N1.xxiii this started to extend down one course deeper than had been the case to the north-east, but beyond this point the whole face had been completely plundered. This plundering can have occurred no later than the fourth century B.C., since the resultant hole was filled in at that date with the debris from an iron furnace (N1–2.xxii9–xxiii) consisting of great quantities of iron dross, ash, and countless fragments of mudbrick baked completely hard by fire. The length of these bricks was nowhere preserved entire. Their other dimensions were *c.* 0·25 × 0·09 m. To the south-west the inner face of the wall continued plundered and here there was evidence not only of fourth-century but also of Roman disturbance (N5–6.xxii8–xxiii). But beyond again in N9.xxii7 the bottom of the inner face was preserved, thanks to the fact that it was here even more deeply founded than it had been before. The masonry seems to have changed to an exceedingly massive adze-dressed polygonal. However, all the upper part of this inner face had been plundered and this plundering seems to have been sealed not only by a fourth-century house above it (to which also belonged a storage pit lined with the inverted neck of a giant pithos, well over a metre in diameter, and paved with tile) but also by a less clearly marked sixth-century occupation level. More of this same heavy inner face was located at O7.xxii5. Here it was even more deeply founded. And here, built against the inner face of the wall but not bonding into it, was a projecting 'step' of masonry 0·6 m. wide and over two courses high. The top of this (at 0·89 m. above modern sea-level) was apparently not only intended to be exposed when the wall was built, but continued so to be as late as the fourth century B.C. It appears to represent a construction analogous with the projecting footing under the Wall 2 inner face in Section λ–λ′.[129]

---

[122] PLATE 15*c*. The plundering of the façade shows clearly in PLATE 14 *a*.

[123] Op. cit. 166–7. But here there is much uncertainty. See p. 56 n. 99.

[124] PLATE 74, KLMxxiii.

[125] PLATE 1 (where it is marked '6th century tumulus'); Texier, *Description de l'Asie Mineure* pl. 131 F. I and II; Weber, *Le Sipylos et ses monuments* pl. 1; Perrot-Chipiez v, fig. 16; F. and H. Miltner, op. cit. 149 ff., figs. 74, 76–77; H. Miltner, *Eski İzmir* 12 ff., fig 12. No pottery dating this grave is recorded from the excavations of Texier or the Miltners, but on the criteria (by no means certain) of masonry style it should be one of the earliest of the Smyrna tumuli. However, since, as the forthcoming publication of the outlying cemeteries will show, our own excavations have adduced no certain evidence for the practice of tumulus-burial at Smyrna before the Lydian period, it seems unlikely to be earlier than the sixth century B.C. Also in favour of a sixth-century date is the fact that dovetail clamps seem to have been used to fasten the course above the apex of the vault (F. and H. Miltner, op. cit. 153). Such lead dovetail clamps occurred in the tomb of Alyattes at Sardis (*Abh Ak Berlin* 1858, 548, pl. iii. 4) but appear to have been unknown in the Smyrna temple buildings of the end of the seventh century B.C.

It would be rash to use such details as the mouldings shown on the tomb in Texier's drawings to establish a closer dating, by reason alike of the anterior and subsequent accounts of Prokesch von Osten and Hirschfeld (p. 36 nn. 2 and 4) and the complete lack of such elements or of a possible attachment for them on the monument as it appears today.

These vaulted structures may reflect an older Bronze Age tradition evidenced by the corbelled tomb-chambers at Isopata, Ras Shamra, and Mycenae and by the vaulted passages at Mycenae and Tiryns.

[126] Compare FIG. 13 and PLATE 14*a* with F. and H. Miltner, op. cit. figs. 74, 76–77. In the 'Tomb of Tantalus' the inward curve of the side walls begins much lower down.

[127] Cf. p. 56 above.

[128] pp. 65 and 123.

The outer face of Wall 3 had suffered even more grievously at the hands of stone plunderers. Its plundering in N4.xxiii3 appeared to be sealed by the fill of Wall 4. Above, a little to the north-west, were found faint traces of the foundations of an early Roman building. Beyond, in N7.xxiii3, a single Wall 3 face-block seemed to have survived in position. It was much more deeply founded than had been the case with the Wall 3 outer face farther to the north-east,[130] and extended down almost to modern sea-level. The outer face of Wall 4 was found preserved for a short distance (in N4–5.xxiii6, N7.xxiii5) in a poor hammer-dressed rubble polygonal construction founded at about 0·6 m. above sea-level. Beyond to the south-west it had been plundered again. The Wall 3 outer face was located again at P1.xxiii. It was of andesite in fine adze-dressed Lesbian masonry and very substantially built. It was preserved up to 0·67 m. above sea-level and seems to have had a projecting footing at about 0·49 m. beneath modern sea-level, but the water prevented its adequate examination. The preserved inner and outer faces suggested that Wall 3 had a thickness at this point of 9¼ m., exclusive of the projecting 'step'. Outside this outer face were found quantities of stone fill that seemed to have belonged to Wall 4.

The identification of this deep-founded wall whose faces have been located in O7.xxii5 and P1.xxiii as part of Wall 3 rather than Wall 2 rests mainly on orientation and the consistent line followed by the Wall 3 inner face. But the case is a strong one. The much greater depth of the footings here seems to arise from the fact that the Wall 2 debris on which Wall 3 was founded farther to the north-east were no longer present, presumably because Wall 2 had swung round to the north-west on a smaller circuit. Indeed, here at the south-west corner, Wall 3, if the identification is correct, was incorporating in the city land that had probably hitherto lain outside it.

6. FROM SECTION λ–λ′ NORTH TO THE NORTH-EAST GATE (Hxxii–Jxxi—Exviii–Dxix)

The long straight stretch of the Wall 3 outer face traced by F. and H. Miltner[131] continued on northwards from Section λ–λ′. In the mudbrick debris outside it in F8.xxi at just under 3 metres above sea-level the chance discovery was made of a child's pithos burial. The pithos lay on its side and was sealed with a round white stone pithos lid, 0·033 m. thick and 0·58 m. in diameter. It contained the ill-preserved bones of a young child and three small vases, a feeding bottle, a cup, and a diminutive 'fruit-stand'. The vases can be paralleled by ones found in the Lydian destruction stratum around the end of the seventh century B.C.

---

[129] p. 41. See also p. 114 below.

[130] pp. 52, 55, 58.

[131] Op. cit. 162 ff.; p. 36 above.

The inner face of Walls 2 and 3 (FIG. 2, *b*)[132] also continued northwards for a space. A fourth-century B.C. house-wall built against it (FIG. 2, *c*) seemed from the meanness of its construction and its unrelated orientation to have belonged to a different building from the massive structure to the south (FIG. 2, *d* and *e*)[133] with which it seemed contemporary. To the north again, although the same heavy Wall 2 construction continued in the lower part of the city wall inner face, the top of it had been rebuilt in lighter masonry, presumably at the time of the erection of Wall 3. To the north beyond this, this inner face appears to have been plundered, and classical house-walls (FIG. 2, *a*) ran right across its line. Indeed, north of J1.xxi4 no further evidence was obtained of a free-standing stone inner face foundation. The stone inner face to the south may have arisen partly because of the exigencies of gate construction;[134] but its eclipse to the north is probably in large part due to the fact that the ground is rising and the Iron Age circuits are here meeting the body of the original Bronze Age *tell*.[135] The stone socles now seem normally to have consisted of a stone outer face revetting the edge of the *tell* and supporting a platform of stone fill at about ground-level inside the city. Only the mudbrick superstructure that went above this seems to have had a free-standing inner face. At H4.xx9 what had apparently served as the inner edge of the Wall 3 socle was uncovered in this changed construction. Here the earlier mudbrick debris had been dug away to a considerable depth and up to a vertical edge and a fill of smallish river stones had been packed into the resultant space, apparently continuing up to ground-level.[136]

Precisely the same phenomenon was met with at F6.xix5. Here, however, there was the suggestion that the inner portion of this fill, although its upper part was renewed in the Wall 3 period, may originally have formed part of Wall 2. Some 5 metres to the east it gave out in a mass of fallen mudbrick, scattered stones, and occupation refuse including shells, animal bones, and pottery of the seventh century B.C. Some 4 metres to the east again this debris had been cut through to make way for the stone fill backing the Wall 3 outer face. This outer face backing was 4·8 m. wide. The topmost preserved courses of the face (F1–2.xx) were in an even battered ashlar construction in andesite.

This Wall 3 outer face continued northwards, curving round slightly towards the north-west. At E3.xix3 it presented a very curious appearance (FIG. 16).[137] At precisely this point the north part of the face was preserved to 5·94 m. above sea-level and the south part had collapsed down to 4·13 m. above sea-level and, at the point of collapse, nearly all the courses of masonry were jointed the one directly above the other. The masonry was ashlar and, although the few white stone blocks were consistently well finished, the surface of the grey andesite ones deteriorated into hammer-dressed work lower down, only the highest preserved course to the north being fully finished with the adze. But the quality of the fitting was consistently high. In the top three courses to the north the batter was ensured by having the faces of the blocks stepped back 0·06 to 0·07 m. Below, at 4·33 m. above sea-level, a further 'step' projected 0·3 m. out from the face of the wall.[138] I owe to J. M. Cook the valuable suggestion that the curious jointing at this point (and perhaps, with it, the change to ashlar from Lesbian masonry in its vicinity) represents the junction of two separately constructed stretches of the same circuit. This is rendered even more

---

[132] pp. 41, 47, 52.

[133] pp. 50 ff.

[134] Cf. the situation at the north-east gate, p. 72.

[135] Cf. pp. 39, 41, 121.

[136] There had been a little erosion in this area and a small part of this fill may have perished. It is just conceivable that a shallow dressed-stone ledge may also have been set under the inner mudbrick face at ground-level at the top of the stone fill, but if so it seems to have vanished completely. In view of the findings to the north (see below) it is possible that the lower part of the deep stone pack at this point may also have belonged to one of Wall 3's predecessors. However, the material of the fill seemed consistent throughout and no ready divisions suggested themselves.

[137] See also PLATE 16 *a*.

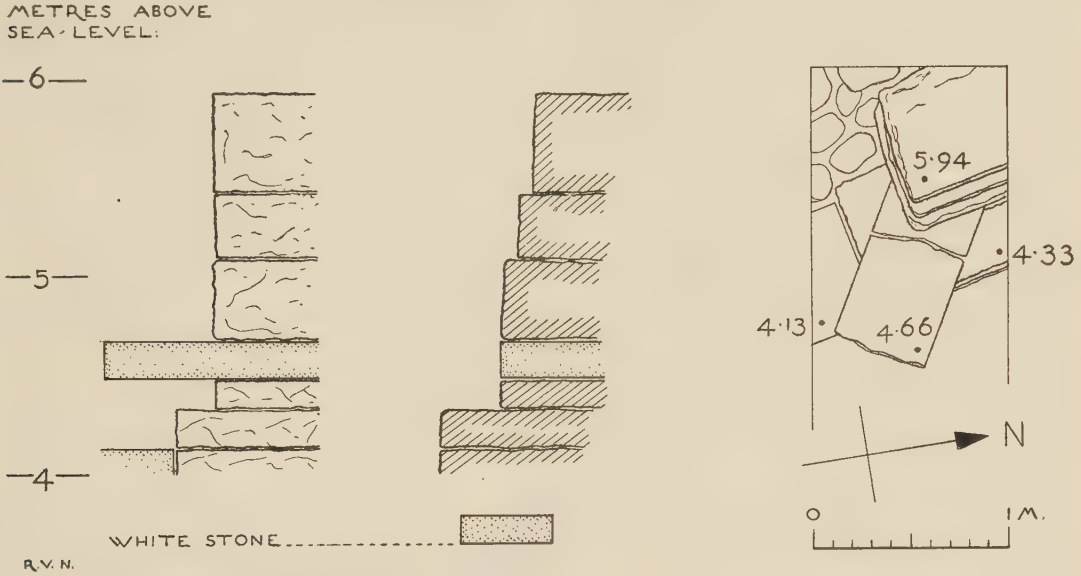


FIG. 16. ELEVATION, SECTION AND PLAN OF THE APPARENT JOINT BETWEEN TWO STRETCHES OF THE WALL 3 OUTER FACE IN EXIX

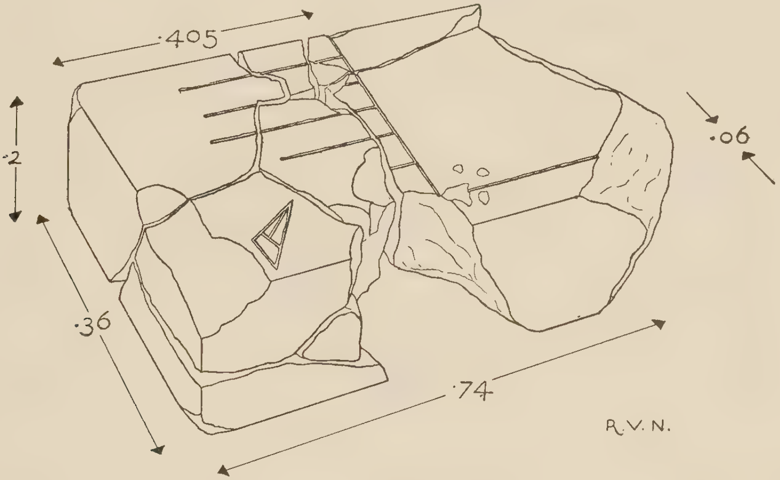


FIG. 17. FRAGMENTARY WHITE STONE BLOCK FOUND OUTSIDE THE FACE SHOWN IN FIG. 16

---

[138] The other probes in this area have not been carried down to a sufficient depth to ascertain whether this pronounced 'step' in the Wall 3 outer face is a normal decorative feature in this part of the circuit or is an isolated phenomenon, serving, e.g., as a ledge under a drainage channel. The latter explanation, however, is insufficient in itself to account for the obvious weakness of the jointing above and below it at this point.

attractive by the observation that the northern part of the Wall 3 circuit seems to have been built earlier than the eastern portion.[139] A tie between the two stretches of face seemed to have been afforded by a white stone block that had been cracked and swung forward by the collapse of the face to the south. It was finely finished with a slight chamfer between its upper horizontal and outer vertical surfaces, and had probably been re-used. A further such white stone block was found shattered outside the face (FIG. 17). The marks on its surface appeared to have been roughly scratched with a point and may suggest that it served as a tie in the stepped upper courses of the wall. The collapsed face was covered with fallen mudbrick and stone fill that seemed to have come down in the early sixth century B.C.

The Wall 3 outer face was located again at E1.xviii9. The masonry had reverted to a massive, battered, hammer-dressed, andesite Lesbian, though ashlar work might have continued above its preserved top (at 5·34 m. above sea-level).

Wall 4 continued north from Section λ–λ′ in the same heavy hammer-dressed polygonal construction. At E2.xx2 it swung round somewhat to the north-west, following the curve in the Wall 3 line.

7. THE NORTH-EAST GATE AREA, INCLUDING SECTION κ–κ′ (Exviii–Dxix—CDxvi–Exvii)

To judge from the succession of flanking towers,[140] there seems to have been a gate at this point in all four Iron Age circuits. Whether this was also the case any earlier has not yet been ascertained, but inside the Wall 1 tower[141] were found masses of fallen mudbrick and stone fill that had presumably collapsed from a previous fortification. Protogeometric sherds were found at the top of this debris, below only Monochrome.

Despite the sophistication of its construction the Wall 1 tower seems soundly dated near the beginning of the Middle Geometric period. Only a part of the north and east sides (FIG. 18, *f*) of the tower has been excavated, and it is uncertain whether the gate that it flanked was approached from the east or the west.[142] The depth to which its faces were founded also could not be determined in the face of the heavy influx of water.[143] Up to just under 3 metres above modern sea-level the faces were of grey andesite blocks fitted in a rubble polygonal style, mainly hammer-dressed but to some extent trimmed with the adze. They showed a moderate batter. The joints between the blocks were rather poor, although something of a virtue had been made of this deficiency by the liberal use of white clay mortar[144] whose strong contrast with the grey of the stone probably originally had a highly decorative effect. At the corner of the tower to the north-east, however, the masonry was distinctly better fitted.[145] Above this andesite socle the faces were continued on up in a beautifully fitted white stone ashlar construction. To the north-west up to four courses of this white stone masonry were preserved,[146] but they had been so badly crushed and ground together under the superincumbent weight of a modern terrace that few inferences could be drawn as to the method of their laying. More informative was the eastern part of the tower (FIG. 19),[147] where it was possible to remove a portion of the terrace above. The

---

[139] See pp. 125 f. on Wall 2/3.

[140] 'Tower' seems the most convenient term. Actually the construction involved prior to Wall 4 seems to have consisted in the revetting of the end of the outer overlapping stub of wall in an 'overlap-type' gate (see pp. 116 f.).

[141] See Section κ–κ′, PLATE 8.

[142] Cf. pp. 71 f. below.

[143] Ground-water on this side of the city is today distinctly higher than it is to the south (p. 61 n. 117) although this difference may not have obtained in antiquity with ready drainage into the estuary to the east. Today there are flood-dykes along the banks of the stream and this area is drained across the higher ground to the west.

[144] FIG. 19, based on drawings by Dr. Corbett. Note that only the upper courses of the andesite socle are shown. See also PLATE 17 *a* and *c*, where the mortar shows clearly.

[145] PLATE 17 *c*.

[146] PLATE 17 *a*; *JHS* lxx. 13, fig. 9.

[147] PLATES 16 *b* and 18 *d* (from the south). On the fitting of this ashlar masonry see also p. 97 and FIG. 32.

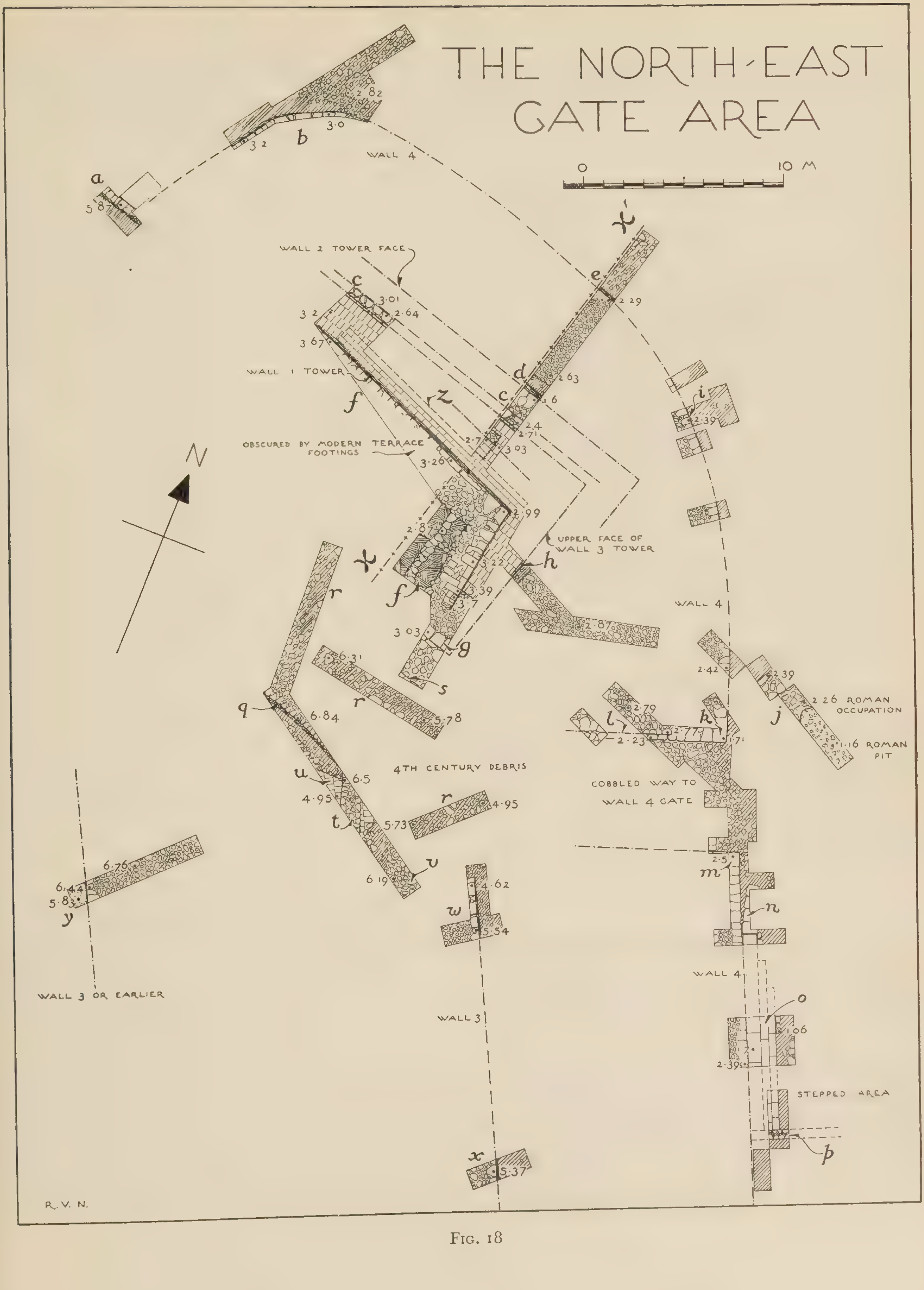

THE NORTH-EAST GATE AREA
0
10 M
a
5·87
b
3·2
3·0
2·82
WALL 4
x'
WALL 2 TOWER FACE
c
3·01
2·64
3·2
3·67
e
2·29
WALL 1 TOWER
f
z
d
2·63
c
·6
2·4
2·71
2·7
3·03
OBSCURED BY MODERN TERRACE FOOTINGS
3·26
N
2·99
2·87
x
UPPER FACE OF WALL 3 TOWER
h
i
2·39
3·22
f
3·39
3·7
WALL 4
2·87
3·03
g
r
6·31
s
2·42
2·39
q
6·84
r
5·78
2·79
l
2·77
k
·1·71
2·23
j
2·26 ROMAN OCCUPATION
1·16 ROMAN PIT
4TH CENTURY DEBRIS
u
6·5
4·95
COBBLED WAY TO WALL 4 GATE
r
4·95
t
5·73
6·76
6·44
5·83
y
6·19
v
4·62
w
5·54
2·5
m
n
WALL 3 OR EARLIER
WALL 4
WALL 3
o
1·06
·7
2·39
STEPPED AREA
p
x
5·37
R. V. N.

Fig. 18

blocks appear to have been cut to shape with a saw. The inner ends of the headers, however, had been left undressed. The andesite and white stone faces were backed by a fill of river stones,[148] between 1½ and 2¼ m. wide. The rest of the interior of the tower was occupied by an earth fill.

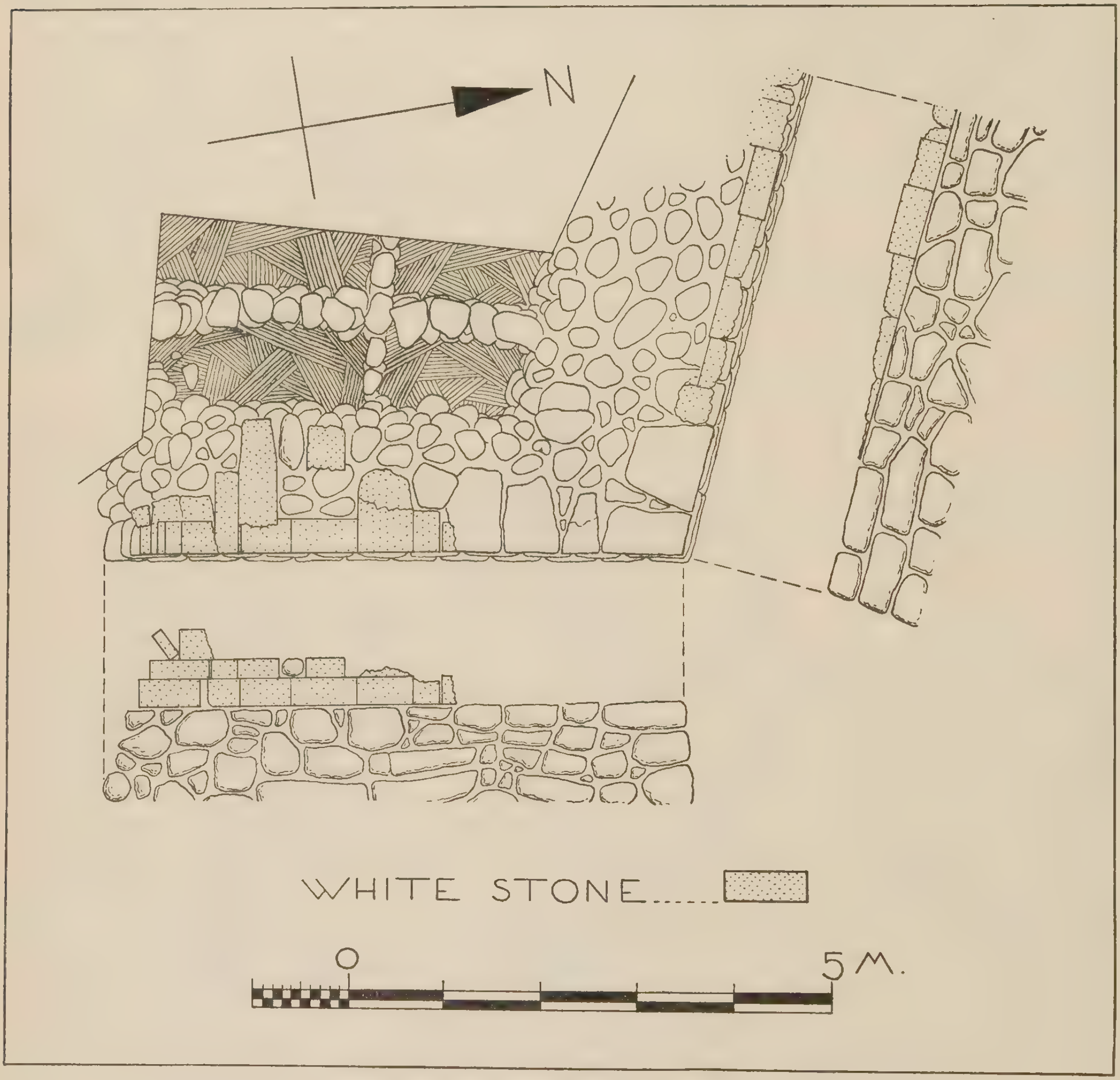


Fig. 19. Plan and elevations of the north-east corner of the Wall 1 tower

This was divided horizontally[149] at approximately 3½ and again at about 4½ m. above sea-level by thin striations of white stone chips and powder, presumably from the preliminary dressing and sawing of the ashlar blocks, which seems to have been done on top of the partly finished tower. Apparently first the white stone faces and then the earth fill behind were raised by about a metre at a time. Within these horizontal divisions the earth fill seems to have been packed in in vertical strips held in place temporarily by thin walls of boulders (FIG. 19)[150] This earth fill was preserved in position up to 4·8 m. above sea-level and seems as though originally it went even higher, suggesting that the white stone construction of the faces continued unchanged at least up to this level. Further, no mudbrick fall has been observed from this tower and it seems probable that the whole of its superstructure, including the battlements, was in white stone. The tower was presumably solid and the earth fill probably continued on up to form the floor of the fighting platform at the top.

---

[148] plates 16 *b* and 18 *d* (from the south) and 17 *b* (from the north-east).

[149] See the section, plate 8.

Why so beautiful and permanent a construction should have been superseded by one, aesthetically at least, considerably inferior is by no means clear.[151] If the approach to the Wall 1 gate was in fact from the west,[152] the change may have been dictated by tactical considerations, inasmuch as the approach from the east brought the exposed right flank of the enemy under fire from the tower.

In this second stage, presumed to be of Wall 2 date, the orientation of the tower was somewhat changed and its projection towards the north was considerably increased, its outer face (FIG. 18, *d*) on the κ–κ' section lying some $4\frac{3}{4}$ m. north of the Wall 1 face. The stone socle of this face, also, could not be explored to its full depth.[153] It was a massive, but rather coarse, hammer-dressed andesite construction built in a rubble polygonal style, and was preserved up to about 1·6 m. above sea-level; it seems originally to have stood somewhat higher.[154] This face had a backing of medium-sized river stones about 3 metres wide on the κ–κ' section line.[155] Behind, again, lay a 'core' of mudbrick, 1·75 m. wide, extending right up to and encasing the face of the Wall 1 tower. The mean dimensions of the individual bricks were 0·5 × 0·3 × 0·12 m. They were laid in alternating courses of headers and stretchers. When the tower was being built it seems clear that this brick was laid first and the fill backing the outer face was then packed in against it. The brick 'core' rested on a fill of small river stones at about 0·7 m. above sea-level and was preserved up to about 2·7 m. above sea-level. It was oriented, not to the face of the tower of which it formed part, but to that of its Wall 1 predecessor against which it was laid. Hence presumably the whole of the mudbrick preserved formed part of the 'core',[156] that of the superstructure above being doubtless oriented to the faces of the new tower. The latter must have extended up at least high enough completely to encompass the remains of its predecessor. The mudbrick 'core' already discussed to the north was also laid against the east face of the Wall 1 tower[157] as far to the south as almost 10 metres from the north face of the Wall 2 tower. It then stopped abruptly on a vertical edge against which had been packed a solid fill of medium-sized river stones. This presumably represented the stone backing behind the south face of the tower facing directly on to the road leading in to the gate. A little over a metre farther south the east face of the Wall 1 tower had been bodily removed to make way for this face.[158] It, in its turn, however, seemed to have been plundered in the next building phase,[159] There seemed also to be some traces of the main Wall 2 line on the other side of the way in to the gate. Here was found mudbrick partly *in situ*, but apparently already in a state of collapse before the building of Wall 3 (FIG. 18, *u*). Its dimensions were 0·46 × 0·3 × 0·09 m.[160] Also the stone inner face (FIG. 18, *y*) in hammer-dressed Lesbian masonry may have originally formed part of Wall 2. The reappearance at this point of a free-standing stone inner-face foundation[161] seems to have been occasioned by the lowered ground-level in the vicinity of the gate.

---

[150] PLATE 17 *b*; see also p. 95 and FIG. 30.

[151] This second tower has yielded virtually no pottery and is not closely datable in terms of associated finds. The close sequence of building suggests that it should be of approximately Wall 2 date; the brick dimensions (pp. 103, 124) favour its having been a very early part of Wall 2.

[152] It would seem somewhat unlikely that the drastic breach effected in the east face of the Wall 1 tower in the construction of its successor (p. 72) would in fact have been made if there were already in existence an approach from the east. But it is noteworthy that, on the admittedly limited indications as yet available to us (pp. 52 f.; resources were not available for a systematic excavation of the gate), the approach to the Wall 2 south-east gate does not seem to have aimed at exposing the unprotected right flank of an attacker. However, here the nearness of the estuary and the resultant general subjection to fire from the whole length of the wall probably made the situation very different.

[153] It probably continued down at least as low as modern sea-level.

[154] Its own backing was actually preserved to just over 2 m. above sea-level and the brick 'core' behind it (n. 156 below) stood even higher.

[155] The thickness of the fill varies because of the difference between the orientation of the brick 'core' and that of the face (see below).

[156] i.e. the stone socle of the outer face should have continued up to this level at least.

[157] On the plan, FIG. 18, it is largely obscured by the Wall 3 brick laid above it, being only shown where the latter has been cut through by some unrecorded previous excavation (FIG. 18, *z*) and in a small 'window' showing its junction with the face-backing. However, it continues under the later brick to the northern and southern limits stated and to others not yet established to the east and west.

Like Wall 2 elsewhere, this construction collapsed. A vertical fault line splitting the mudbrick 'core' of the tower from top to bottom[162] suggests the reason. It seems that a violent earth tremor had momentarily split the whole structure open. With this damage in its foundations it is not surprising that the superstructure perished.[163]

The collapsed Wall 2 tower was rebuilt in the seventh century B.C.,[164] apparently as a part of the Wall 3[165] circuit. The κ–κ' section (PLATE 8) offers a very interesting picture of what happened. Here it seems that the debris outside the Wall 2 tower face was cleared away down to about 0·7 m. above sea-level.[166] The top of the Wall 3 stone socle seems to have consisted of a series of 'steps' revetting the slope up from the preserved top of the Wall 2 face. Two of these 'steps' were preserved along the north side of the tower under the edge of the mudbrick superstructure (FIG. 18, *c*), only one along the east side (FIG. 18, *h*). In order to lay the 'step' second from the top in the κ–κ' section, part of the Wall 2 brick behind was cut away and the resultant hole thereafter lined with white clay mortar and packed with large pieces of Wall 2 brick. Perhaps the topmost 'step' was an afterthought. Anyway, the same process was repeated for it, the hole being filled mainly with dissolved mudbrick.[167]

Above the top 'step' and with its edge set back some 0·15 m. from it, the bottom of the mudbrick superstructure of the tower was found in position. The top of the Wall 2 'core' had been trimmed off to receive this Wall 3 brick, not quite horizontally but with a slight slope in towards the centre of the tower, thus giving the whole an inward thrust and reducing the danger of collapse. This Wall 3 mudbrick had suffered much from root disturbance. Its thickness was 0·08 m. Its other dimensions appeared to be *c.* 0·5 × 0·3 m.[168] It was laid in alternating courses of headers and stretchers oriented to the faces of the wall. This superstructure was apparently less in area than that of its Wall 2 predecessor. It seems likely that it stood to a very great height in view of the probable height of the Wall 3 circuit itself.

---

[158] FIG. 19, PLATE 16 *b*.

[159] At least, it seems more likely that the south face surviving at a higher level (FIG. 18, *g*) is of Wall 3 date.

[160] p. 103.

[161] Cf. p. 66 above.

[162] Section κ–κ', PLATE 8.

[163] This interpretation, which I find completely convincing, I owe to Dr. A. E. Ozanne.

[164] If, as seems probable but not completely certain, the smaller 0·3-metre-wide brick was used, this somewhat favours a date in the first half of the seventh century (i.e. as part of the Wall 2/3 construction phase—pp. 125 f.). The pottery from this structure, however, will hardly allow of a date before the middle of the century.

[165] It probably also constituted a somewhat late part of the Wall 2/3 line on the north side of the *tell* (see n. 164 above), but, in view of this lateness and the uncertainty in any case obtaining as to its dating, the designation 'Wall 3' has been retained for it.

[166] The quantities of stones in the dissolved mudbrick below this level had presumably fallen from Wall 2, since Wall 3 seems to have lost very little masonry. The mudbrick debris above, however, seemed to be from Wall 3. This seems easily the most probable interpretation. If correct, we may infer a stepped crowning to the socle as found elsewhere on the site and assume that the lower 'steps', being simply a facing and not structural members, were easily plundered later. However, although unlikely on architectural and excavational grounds, we cannot yet completely exclude the possibility that the 'steps' may simply have been set at the top of a clay glacis, consisting of seventh-century mudbrick debris, that quite concealed the Wall 2 face.

[167] PLATES 8 and 17 *d*. At the other points cleared only a single trench had been dug (for the upper 'step').

[168] See n. 164 above, p. 103 below.

To the south, the Wall 2 stone fill beyond the brick 'core' seemed to have been heightened and extended south to a face of massive hammer-dressed blocks of andesite (FIG. 18, *g*) which probably represents the south face of the Wall 3 tower. Only one course of this face was preserved,[169] on projecting footings. These in turn rested on a mass of river boulders that might have formed the substructure for a road. The curious change in direction shown by the most westerly of these face-blocks seemed perhaps to be due to its having shifted its position under the impact of debris from above. It did not seem to be reflected in the footings. This face was exposed as late as the sixth century B.C.

To the south-east of the tower the outer face of the main body of the Wall 3 circuit was also located at FIG. 10, *w* and *x*. At *x* the Lesbian masonry continued to the preserved top of the face[170] which was, however, trimmed quite level and horizontal as though to take further ashlar masonry such as that observed to the south.[171] At *w* this face had been demolished to make way for a fourth-century construction.[172] What survived of it showed a deterioration in the hammer-dressing of the face, especially lower down. The stone fill backing this face appeared to have been found again at FIG. 10, *v*. As distinct from the Wall 2 material beyond it, it may have had a width of about 4½ m. However, the actual standing wall at this stage probably extended from this outer face at *w* and *x* to the inner face at *y*. The debris against the latter was of the time of the Lydian sack of the city.

When Wall 3 crumbled away the debris from its mudbrick superstructure was very extensive. The bulk of this must have come down in the sixth century B.C., as was made clear at a few points[173] by associated finds. In the main, however, this fallen mudbrick yielded nothing later than the seventh century B.C. At FIG. 18, *a*, this dissolved and fallen Wall 3 mudbrick was revetted by an ancient terrace wall, subsequent to the collapse of Wall 3 and presumably anterior to the building of Wall 4, but otherwise undated.

In classical times a further gate was built at this point as part of the Wall 4 circuit. In the main, the only material dating its construction were the much earlier sherds that had come down with the Wall 3 brick, although there was abundant evidence that it had been exposed in the fourth century B.C. and even later. However, a fragment of classical tile was found against the edge of the curved fill (FIG. 18, *q*) and another appeared with amphora fragments, probably of the fourth century B.C., under the cobbling leading in to the gate, whilst the fill covering the stub of the pierced Wall 3 face (FIG. 18, *w*) seemed clearly of the fourth century B.C.[174]

The Wall 4 tower (if it may be dignified by such a title) consisted of a large, irregularly curved projection whose shape may have been partly dictated by that of the Wall 3 debris. Its outer face (FIG. 18, *b*, *e*, *i*, *k*)[175] was a rubble-polygonal construction of large hammer-dressed blocks of andesite with smaller stones packing some of the joints. On the κ–κ′ section (PLATE 8) it lay about 6·65 m. north of the old Wall 2 tower face and was preserved up to 2·29 m. above sea-level, being founded at about 0·1 m. above sea-level. Outside the face a stratum of sand extended up to 0·45 m. above sea-level and chips from the hammer-dressing of the masonry gave the outline of the foundation trench cut in it. This could not be properly distinguished in the mudbrick debris above, but as this debris yielded only seventh-century B.C. material it seemed probable that it, like the other fallen mudbrick outside the Wall 4 face in this area, had originally come down from Wall 3, Wall 4 itself being probably an all-stone construction.

---

[169] PLATE 16 *b foreground*; note that in this photograph the fill behind the face has been removed.

[170] At 5·37 m. above sea-level.

[171] pp. 66 ff.

[172] See n. 174 below and p. 74.

[173] e.g. to the north-west of the fourth-century 'round-tower' at FIG. 18, *b*.

[174] Here, however, there might be intrusion from the fourth-century debris (FIG. 18, *r*) to the north.

[175] See also PLATE 16 *c*, the κ–κ′ section at an early stage in its excavation viewed from the north, showing this face and those of Walls 3 and 1 behind.

Behind the face a fill of small river stones and quarry splinters[176] extended back to the standing remains of Wall 3.[177]

At FIG. 18, *k*, this curved face swung in to the west, apparently to front on to a cobbled way leading in to the gate. The masonry at the corner was of massive, roughly squared blocks of andesite. It was noteworthy that it was less deeply founded than that facing on to the cobbled way farther to the west, this anomaly perhaps arising from variations in ground-level obtaining before the building of Wall 4. The rather better-preserved corner-stones to the south side of the cobbled way (FIG. 18, *m*) were bedded at about the same level as those to the north. The south-east face of the tower fronting on to this cobbled road was continued up in a much more finely finished construction in smaller masonry set 0·3 m. farther back (FIG. 18, *l*). The continuity of the fill behind suggested that this may have been an original part of Wall 4, rather than a subsequent rebuilding. To the east of the cobbled road was found an isolated area of later occupation dating from about the beginning of our era (FIG. 18, *j*).

Beyond the cobbled road the outer face of Wall 4 extended south-east from the corner (FIG. 18, *m*), its masonry improving somewhat on the way, to link up with the long stretch already described[178] along the east side of the city. Built right against this face were three splendidly dressed andesite steps that seem to have served some decorative purpose, flanking the gate to the north.[179] The steps were built of large ashlar slabs[180] with their horizontal surfaces very evenly adze-dressed, while the contrasting crisp finish of their vertical edges seemed to have been achieved by splitting away the surface with diagonal chisel blows.[181] Like Wall 4 behind them, the steps were bedded down on dissolved and fallen Wall 3 mudbrick. To the east of the steps the trimmed top of this, associated with traces of a flagged pavement, gave the original ground-level outside them as approximately that of the top of the bottom step. To the south the steps came to a stop against the meagre stone foundations (FIG. 18, *p*) for an enclosure wall, perhaps of mudbrick. To the north they may have given out gradually against the rising ground leading up to the cobbled way. The topmost step, however, was extended by a line of large flagstones (FIG. 18, *n*) towards the road. After the abandonment of the city in the fourth century B.C. the steps were gradually sealed by further deposits of dissolved brick clay (FIG. 20).

On the form taken by the gate presumed to have stood at the head of the cobbled way there is as yet but little information. However, the slightly curved inner edge of a stone fill of apparently this date (FIG. 18, *q*) may have backed a plundered or collapsed wall-face fronting on to this. The broad foundation to the south of this (FIG. 18, *t*) was probably contemporary with it. Further, it seems possible that the faces of the Wall 4 gate may have been plundered bodily, this area being occupied by great masses of dislodged stone fill of the fourth century B.C. A foundation bedded on top of this debris (FIG. 18, *s*) was of uncertain, but presumably post-classical, date.

---

[176] Precisely of this kind is much of the material re-used in the backing of the modern terraces round the *tell*.

[177] It is probably to be assumed that such an extensive stone backing originally lay behind the Wall 4 face in the now badly plundered stretches to the east and south of the city, e.g. Sections λ–λ' (p. 50) and μ–μ' (p. 56).

[178] pp. 50, 53, 68.

[179] FIG. 18 *o*, FIG. 20, PLATE 17 *e*. By describing them as 'decorative' I merely wish to stress that they can hardly have fulfilled their ostensible practical role of providing an alternative path up on to the cobbled way—a role stressed by the continuation of the line of the top step in the form of a flagged path (FIG. 18, *n*; see below). They doubtless served some practical function, but it seems unlikely to have been this. The width of the top step is too slight for one to be able to walk along it against the face of the city wall in any comfort, whilst the small detour involved seems somewhat pointless unless further steps some way away to the east led on down to the estuary. They would, however, have been excellent for displaying articles for sale. Perhaps they constituted one of the amenities of a small open-air market here by the gate. The wall bounding them to the south-east (FIG. 18, *p*) may then have been simply an enclosure wall, but could conceivably have helped to support an awning.

[180] Sample dimensions: in the photograph, the block showing complete in the top step, 1·55 × 0·69 × 0·32 m., and that showing complete in the bottom one, 1·16 × 0·48 × 0·32 m. Normally the masonry associated with the fortifications has been fitted empirically. These blocks are the rare exceptions pre-dressed to size. However, in view of the probability that they are re-used material dressed down again for their second role, I should prefer not to be too definite about the foot-standard in terms of which they were originally marked out (see pp. 104 f.). Possibly it was the 0·327-metre foot.

[181] The latter type of dressing is attested as early as the seventh century B.C. at Smyrna, being used, for example, on one of the pilaster bases, perhaps itself re-used material, in the late seventh-century B.C. temple pylon.

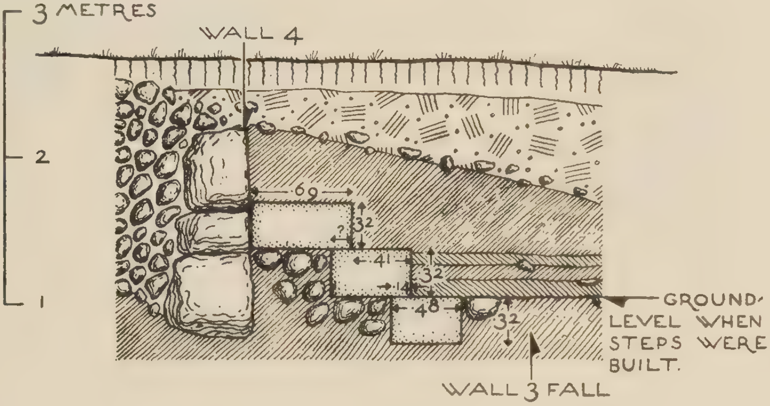


FIG. 20. SECTION THROUGH THE STEPS BY THE NORTH-EAST GATE

8. To the North of the Temple, Including Sections θ–θ′ and ι–ι′ (CDxvi–Exvii—DExiii)[182]

In 1950 and 1951[183] a number of probes were sunk beneath the stone fill of the 'inner platform' of the large temple lying to the west of the north-east gate. Towards the west end of this (FIG. 21, *a*, *b*, *c*) a burnt stratum was reached at between 7·75 and 7·6 m. above sea-level, apparently dating to about the beginning of the Late Geometric period; and the same, or an apparently roughly contemporary, stratum continued south at a lower level (FIG. 21, *d*) at 6·85 m. above sea-level and beyond under the apsidal building at about 6·5 m. above sea-level. Beneath this burning to the north (FIG. 21, *a*) a fill of large river boulders continued on down to a great depth, whilst farther south (FIG. 21, *c*) a pack of small stones overlay an apparently Monochrome level at 7 m. above sea-level. To the east (FIG. 21, *f*) a burnt stratum, perhaps contemporary with those to the west, occurred at about 6·5 m. above sea-level. Under this a fill of small stones continued down to a further dense strosis of blackening at around 6 m. above sea-level, which was also reflected to the south-west (FIG. 21, *e*). At this stage certainty is not possible, but it seems likely that the lower fill of boulders to the north (FIG. 21, *a*) may be of Wall 1 date, as is also suggested by the great thickness of the mudbrick fragments in the debris apparently associated with it to the north-west.[184] The packs of small stones under the burning to the south and south-east (FIG. 21, *c* and *f*) may perhaps be contemporary with this. Thereafter, to the west

---

[182] The full account of the seventh-century B.C. temples will be published separately. The names used for the different building phases, 'Temple Platforms I', 'II', and 'III' (dating to the early seventh century, early third quarter of the century, and late seventh century respectively), are those that will be employed there, as also the distinction between the 'inner' and 'outer platforms'. Roughly speaking, the 'inner platform' is the smaller rectangular area to the north-east occupied by solid stone fill, whilst the 'outer platform' consists in the extension of this to the west and south by stone walls backing an earth fill.

[183] The approximate limits of these investigations by J. Boardman and Miss D. H. Gray are shown on FIG. 21. They have been omitted on the detailed temple plans to be published later in the interests of avoiding confusion.

[184] Section θ–θ′, FIG. 23. This is not, however, conclusive, since the thicker brick was still used in the Wall 2 tower at the north-east gate (p. 71; see also p. 103 below).

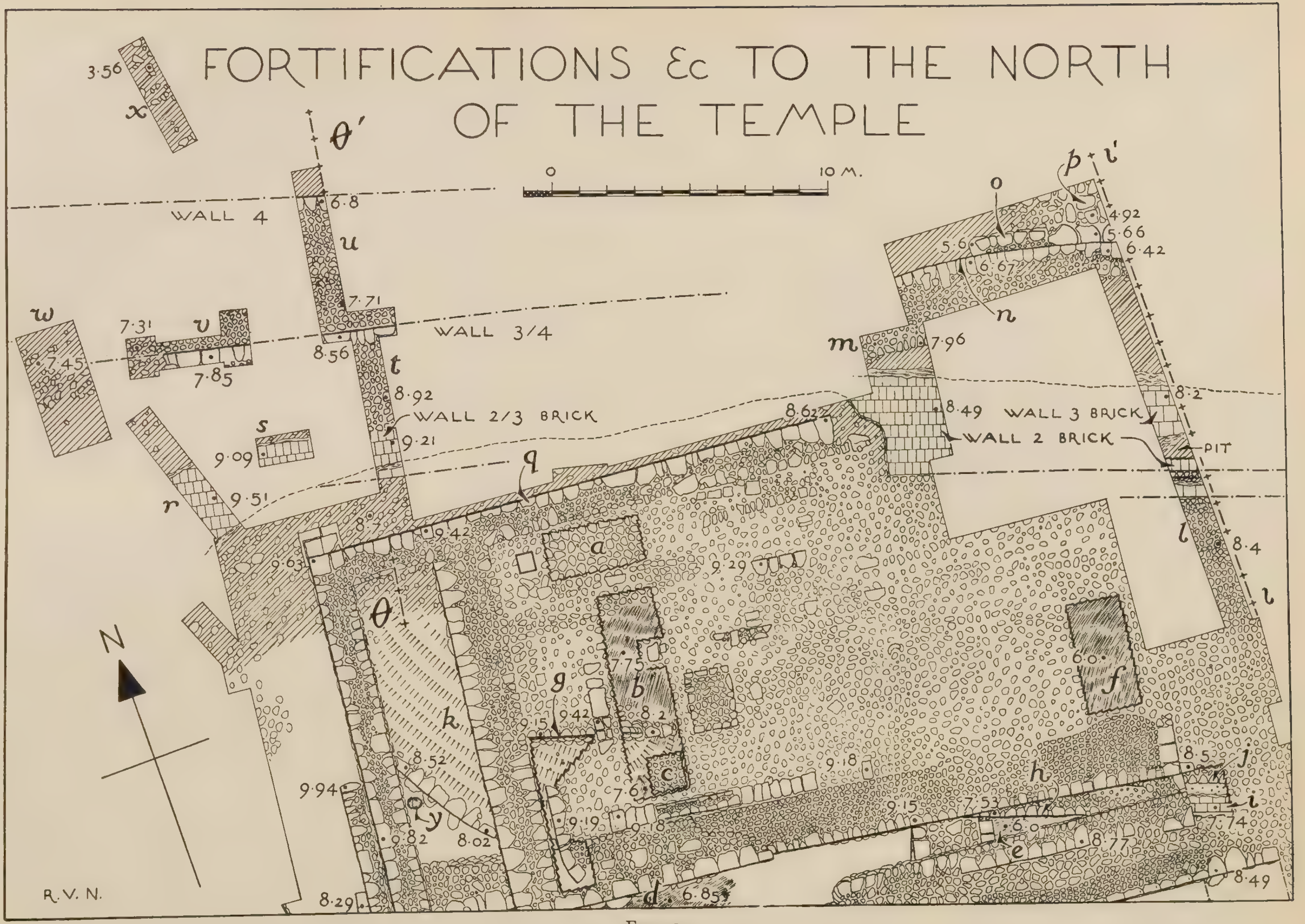

FORTIFICATIONS &c TO THE NORTH OF THE TEMPLE
0
10 M.
WALL 4
WALL 3/4
WALL 2/3 BRICK
WALL 3 BRICK
WALL 2 BRICK
PIT
N
R.V.N.
θ′
θ
a
b
c
d
e
f
g
h
i
i′
j
k
l
m
n
o
p
q
r
s
t
u
v
w
x
y
3·56
6·8
7·71
8·56
8·92
9·21
7·31
7·45
7·85
9·09
9·51
8·7
9·63
9·42
9·29
8·62
7·96
8·49
8·2
4·92
5·66
6·42
5·6
6·67
8·4
6·0
7·75
8·2
9·15
9·42
9·18
7·6
9·19
9·18
9·15
7·53
6·0
8·77
8·5
7·74
8·49
6·85
8·52
9·94
9·82
8·02
8·29

FIG. 21

and south-west ground-level was raised by an accumulation of brown earth, possibly dissolved mudbrick.

Of the next stage we have much more information, though its interpretation is still elusive. As may be seen from Section ι–ι′ (FIG. 22), when the mudbrick of Wall 2 was laid an extensive stone fill had already been packed in to receive it. Although this doubtless incorporated much of the earlier Wall 1 fill, its upper part at least seemed to be contemporary with the brick. The Wall 2 mudbrick (FIG. 21, *l* and *m*) had the mean dimensions of 0·47×0·28×0·085 m.[185] and was laid in alternating courses of headers and stretchers. The outer face of this wall was nowhere preserved to the level dug, the whole of the construction having collapsed to the north of a jagged fault-line in the brick.[186] The fill of river stones behind the mudbrick appeared to extend back above the burnt strata already described across the whole width of what was later to become the easterly part of the 'inner platform' of the temple, until, almost 12½ m. south of the mudbrick, it came to a halt with a vertical face (FIG. 21, *h*). This was a rubble construction of smallish hammer-dressed andesite blocks, tolerably well finished.[187] It was preserved to a height of 1·4 m. and had approximately the same orientation as the Wall 2 mudbrick to the north. To the east its line appeared to be continued in mudbrick.[188] This south edge may also have been stepped upwards by an ill-preserved face in similar masonry running parallel with it just over a metre to the north (FIG. 21, *j*). The platform of stone fill continued to the west, but here it was not quite so wide, its south face (FIG. 21, *g*) lying some 3 metres farther to the north. To the extreme west beside the west wall of the Temple III 'inner platform' this face was preserved to a height of 0·94 m. above a considerable footing of undressed boulders. Farther east (FIG. 21, *b*) only this boulder footing had survived. It was bedded in the brown earth above the burnt stratum.

It would seem that the whole of the constructions just described belongs to a single building phase dating from around the middle of the eighth century B.C. It is noteworthy that at this date there was already a massive built platform inside the city wall at this point, comparable in height and extent with the later temple platforms. It is not known whether it served some purely military purpose in connexion with the debouchment of the Wall 2 gate, or was in fact a less dignified predecessor of the great temple platforms.[189] But towards the end of the eighth century a child burial (FIG. 21, *y*) was made a little to the south-west of this platform, rather suggesting that this part at least was not yet considered sacred ground.

Temple Platform I was built around the beginning of the seventh century B.C. It occupied only slightly less than the area of what is referred to as the 'inner platform'. Consequently, its south-west part extended well beyond the limits of the eighth-century platform to the south of the wall, FIG. 21, *g*. Here the level was made up with a fill of stones, including many worked blocks, earth, and occupation debris of the end of the eighth century. To the west of the new platform the mound of brown earth (FIG. 21, *k*) was not cleared away but simply enclosed in a curved stone kerbing.

---

[185] p. 103.

[186] See Section ι–ι′, FIG. 22. Much damage may have been done in the earthquake postulated around 700 B.C. (see p. 124), but this particular fault-line appears to be the product of a later calamity when Wall 3 was already in existence. On its closer dating see p. 79.

[187] Its construction is well shown on one of Dr. Corbett's elevation drawings to be published with the account of the seventh-century temples.

[188] With the important reservation that the south face of this mudbrick was apparently not cleared down in the excavation. The dimensions of the bricks themselves seem to have tallied with those of Wall 2 to the north (see above), save that they were somewhat thicker. See p. 103 below.

[189] Against the latter interpretation speaks the rarity of specifically votive material of the eighth century, only one such piece seeming certainly assignable to it on stratigraphical grounds, part of a faience figurine (S.F. 1350) apparently found under the foundations of Platform I. For this reason this eighth-century construction has not been included in the publication of the temples proper. In any case, the building of Temple Platform I shortly after 700 B.C. marked a radical change and the emergence of a public cult of the first magnitude.

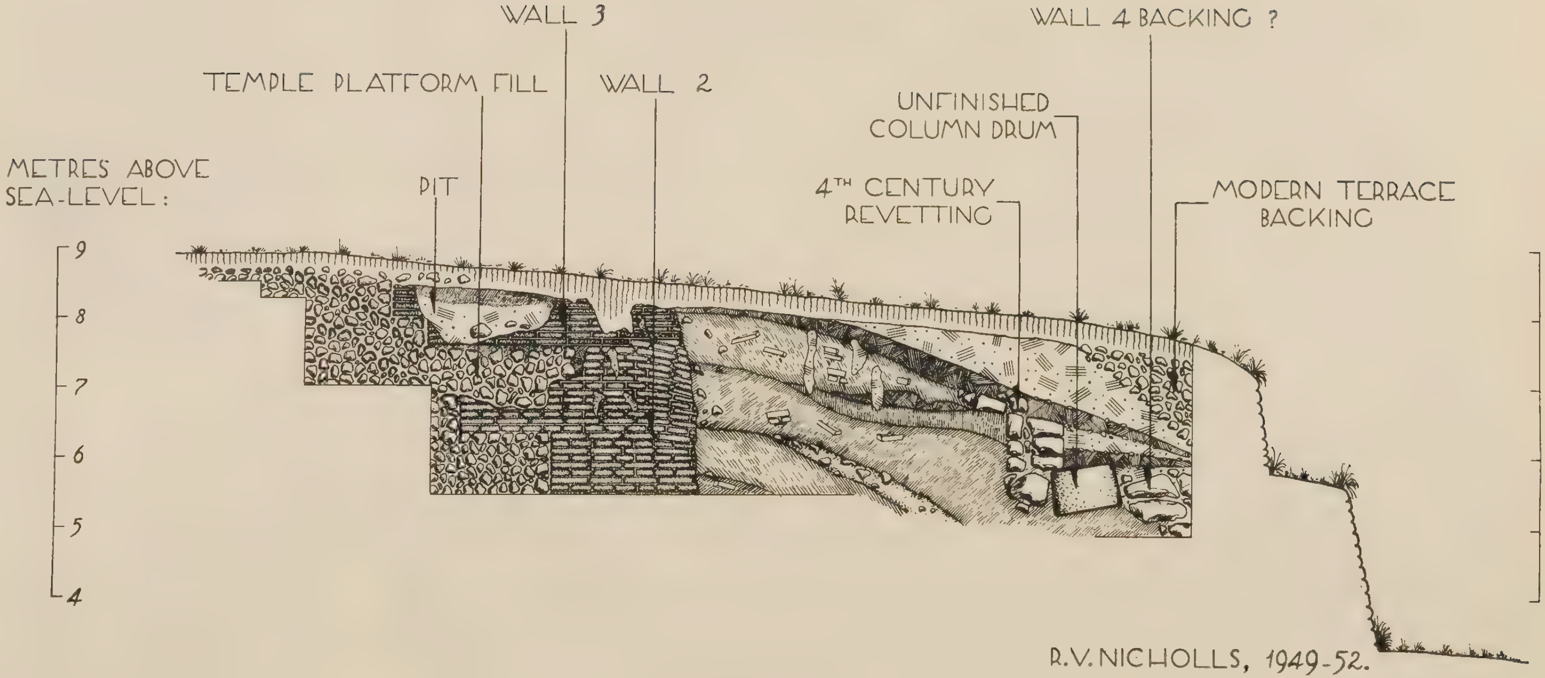

WALL 3
TEMPLE PLATFORM FILL
WALL 2
WALL 4 BACKING ?
UNFINISHED
COLUMN DRUM
METRES ABOVE
SEA-LEVEL :
PIT
4TH CENTURY
REVETTING
MODERN TERRACE
BACKING
9
8
7
6
5
4
R.V. NICHOLLS, 1949-52.

FIG. 22. SECTION ι–ι′

To the north-west of the temple it would seem that Wall 2 had vanished almost completely in the catastrophe of around 700 B.C. Here a start was made on the rebuilding of the fortifications in the early seventh century B.C. (FIG. 21, *r*, *s*, *t*; FIG. 23).[190] The previous debris was cut back to receive a further mudbrick pack, laid, as usual, in alternating courses of headers and stretchers. The approximate dimensions of the individual bricks were *c.* 0·5×0·3×0·08 m.[191] In view of their intermediate position in time, the name 'Wall 2/3' has been assigned to these traces, although in fact they probably formed an integral, though early, part of the Wall 3 circuit. Of this wall only a part of the brick pack survived, but the later wall-face to the north (FIG. 21, *t*, *v*) seemed so truly oriented to this mudbrick as to suggest that it was a simple rebuilding of the Wall 2/3 outer face.[192]

Temple Platforms I and II seem not to have had a built north edge, it being sufficient to have this side of their fill bolstered up by the brick of the fortifications. A pit in which the Wall 2 mudbrick in Section ι–ι′ (FIG. 22) was cut back up to 1¾ m. and replaced with stone fill probably indicates the northerly limit of the area over which a more substantial substructure than mudbrick was needed in the Platform II stage, ultimately to carry the weight of the temple buildings. It is also to be observed that the platform of stone fill also extended far to the east of the temple proper, perhaps all the way to the north-east gate, although the severe erosion holds out no hope of finding remains *in situ* of the altars or other buildings that may have gone above it. The stone face apparently bounding the south edge of this easterly stone fill in the late seventh century B.C. appeared to have been located at E3.xvi7.[193] It was noteworthy that it was quite differently oriented from all the temple platforms.

However, the unfinished Temple Platform III of the late seventh century had, in contrast with its predecessors, a built north face (FIG. 21, *q*). This was not completed all the way to the east. As far as it went its broad foundation trench, lined with andesite chips from the dressing of the face, ploughed through the Wall 2/3 and Wall 2 mudbrick (FIG, 21, *r*, *t*, *m*). This wall, however, may not have been intended to be the final north wall of Platform III. The projecting stepped arrangement at the north-west corner seemed best to be explained as a tie to facilitate the extension of the 'outer platform' round to the north of the temple as well, when once a northward extension of the fortifications made this possible. If this was so, one might hope that the slight error in the orientation of the present north wall was to have been corrected in this subsequent one. But at the west end of the temple the builders apparently did not wait for this northern extension to be made, but were proceeding with the superstructure of the building above the completed foundations.

Meantime the urgency of defence also made claims. In the ι–ι′ section the Platform II stone fill made way for a Wall 3 mudbrick pack, replacing the damaged Wall 2 one below. This mudbrick had been badly mauled by later pits, so that certainty as to its dimensions was not possible. However, it seemed to be of the usual Wall 3 size,[194] save that its thickness (0·075 m.) was somewhat less. It appeared to retain the same orientation as the Wall 2 brick below. The preserved evidence does not permit one to say how far Wall 2/3 was also refurbished directly to the north of the temple.

At some time after the Lydian sack of the city but before the end of the sixth century B.C. such of Walls 2, 2/3, and 3 as had not already subsided in the natural process of decay seem to have been shattered by a further earthquake, producing vertical faults in the mudbrick (FIG. 21, *l*, *m*, *r*, *s*, *t*; FIGS. 22, 23). Also in the sixth century B.C. much of the white stone superstructure of

---

[190] On the chronological aspect see pp. 125 f.

[191] p. 103.

[192] p. 81.

[193] The wall above it to the south-west in E3.xvi7 seemed to be of the fourth century B.C.

[194] p. 103.

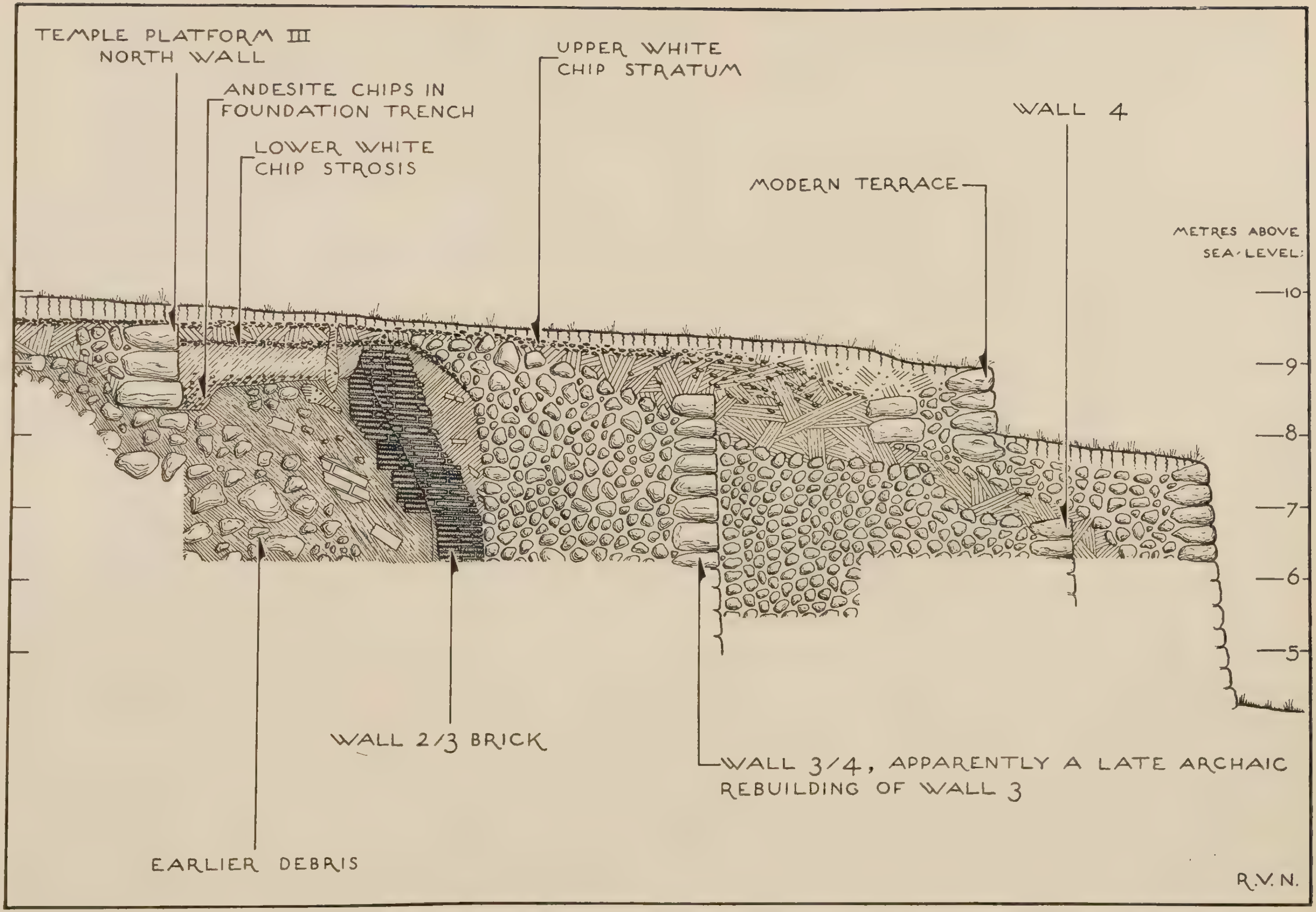

TEMPLE PLATFORM III
NORTH WALL
ANDESITE CHIPS IN
FOUNDATION TRENCH
LOWER WHITE
CHIP STROSIS
UPPER WHITE
CHIP STRATUM
WALL 4
MODERN TERRACE
METRES ABOVE
SEA-LEVEL:
10
9
8
7
6
5
WALL 2/3 BRICK
WALL 3/4, APPARENTLY A LATE ARCHAIC
REBUILDING OF WALL 3
EARLIER DEBRIS
R.V.N.

Fig. 23. Section θ–θ'

the unfinished third temple was being broken up to provide smaller-scale building material, the ground around about becoming covered as a consequence with layers of white stone chippings.

Apparently about the beginning of the fifth century B.C.[195] a start was made on the rebuilding of the circuit wall to the north of the temple (FIG. 21, *t*, *v*; FIG. 23). The outer face that was constructed at this time was preserved up to 8·56 m. above sea-level. It was of andesite blocks, some of them regularly dressed. However, the fitting of the masonry[196] was less precise and out of harmony with the finish of the better blocks, which may have been re-used material. Behind this face a fill of river stones extended back to what survived in position of the Wall 2/3 mudbrick. To this whole construction has been assigned the name 'Wall 3/4'. It was noteworthy that, of the two strata of white stone chips at this point, the lower one was anterior to the Wall 3/4 fill and so was probably the product of sixth-century depredations, whilst the upper one was of a later date than Wall 3/4 and was presumably of the classical period.[197]

However, this construction of Wall 3/4 seems only to have proceeded a very short way indeed, and the north-easterly part of the temple area continued unprotected against erosion. Around the early fourth century B.C.[198] a stone terrace wall (FIG. 21, *n*) was built in an attempt to remedy this. Its face was constructed of andesite, mainly in hammer-dressed rubble polygonal masonry,[199] preserved to a maximum height of 1·35 m., although originally it must have gone considerably higher.[200] The wall proved unequal to its task and bulged outwards with the pressure of debris behind it. It is uncertain whether the massive projecting footing,[201] consisting of unfinished white stone column-drums from Temple III[202] and roughly shaped andesite blocks, was an original, if unavailing, precaution against such subsidence and bulging or represented a subsequent attempt to prevent any worsening of the dangerous overhang that the wall had developed.

Later in the fourth century, it would seem,[203] a securer protection to the edges of the *tell* was afforded by the building of Wall 4. To the north-west of the area the Wall 3/4 face still stood exposed when Wall 4 was built, and a solid pack of river stones was laid against it and all the way out to the Wall 4 face. This Wall 4 fill yielded little relevant dating material, but did include two fragments of late fifth-century wine-jars. The upper edge of a pack of large stones outside the terrace wall (FIG. 21, *p*) may also have formed part of the backing of Wall 4.

To the extreme west of this area no surviving traces of the fortifications were discovered to the depth dug (FIG. 21 *w*), but only mudbrick and stone debris, apparently mostly from the seventh-century circuit.[204] Similar dissolved mudbrick, &c., from the seventh-century wall was found out to the north (FIG. 21, *x*).

---

[195] The dating material from its fill was a consistent lot spanning the second half of the sixth century B.C.

[196] PLATE 18 *a*, from a photograph by J. M. Cook.

[197] However, towards the north this upper stratum represents chippings washed down by rain from the higher ground to the south at a much later date after the abandonment of Wall 4.

[198] The date is based on a few black-glazed sherds found in the earth fill behind it. It has not been verified whether this terrace linked up with the unfinished Wall 3/4 line to the west and its relation to the undated terrace to the east (p. 73 above, FIG. 18, *a*) is also unknown.

[199] The adze-dressed Lesbian and ashlar blocks incorporated in it had presumably been plundered. See PLATE 18 *b* and *c* (from photographs by J. M. Cook and B. B. Shefton respectively).

[200] The stone fill backing the upper part of the face has not survived the destruction of the latter, save for a thin layer of stones from the bottom of it securely bedded in the fallen mudbrick beneath. But even these were preserved up to about 8 metres above sea-level to the south at FIG. 21, *m*.

[201] FIG. 21, *o*, PLATE 18 *b* and *c*.

[202] The column-drums themselves will be dealt with in the forthcoming temple publication.

[203] It would seem most reasonable to assume that the terrace wall passed out of use when Wall 4 was built. If so, a late dating for Wall 4 becomes probable. See further p. 135.

[204] But at *w*, though not at *x*, also associated with occupation debris of the sixth to fourth centuries B.C.

9. TO THE NORTH OF THE MAIN OCCUPATION PROBE, INCLUDING SECTION η–η' (DExiii–EFxi)[205]

In the main, in Section η–η' only Iron Age levels have been cleared, and a great depth of Monochrome occupation beneath them[206] remains as yet unexplored. Towards the north at the maximum depth reached the earliest traces uncovered consisted, like those in Section κ–κ',[207] of quantities of mudbrick and stone debris occupying the edge of the *tell* and perhaps coming from a collapsed fortification (PLATE 9). Although Protogeometric sherds occurred on top of this debris, the debris itself seemed of pure Monochrome date and was in fact sealed to the south by Monochrome occupation.[208] This belt of debris seems not to have been an isolated phenomenon and perhaps extended at least round the north side of the *tell*. It may have been located again, a short way in from the edge of the occupation mound, in the deep-level probe between E7.xiii1 and E8.xii8.[209] Here up to 1½ m. of stone and mudbrick debris overlay earlier Monochrome occupation levels. The mudbrick fragments had the thickness (0·08 m.) characteristic of the later Monochrome levels.[210] This debris was sealed by two further strata of Monochrome occupation anterior to the earliest Protogeometric level.

Here, as elsewhere, the first substantial Iron Age circuit to be met with was Wall 1, and it seems that in the early Iron Age before it was built the edge of the *tell* was occupied by the sloping mass of Monochrome debris already described.[211] Wall 1 in this area seems to have been constructed at the very beginning of the Middle Geometric period.[212] The north edge of the Monochrome debris was cut back to receive its mudbrick, laid in alternating courses of headers and stretchers stepped up towards the south. The individual bricks had the same dimensions as those of Wall 1 in Section λ–λ'.[213] Three courses of this Wall 1 brick projected some 0·47 m. southwards but above 6·64 m. above sea-level the south edge of the mudbrick rose vertically and probably originally continued up to form the inner face of Wall 1.

As in Section λ–λ'[214] an extensive fill of river stones was packed against the inner edge of this mudbrick.[215] Here, however, the purpose was probably not so much to create an artificial

---

[205] The full account of the extremely complex sequence of building in this area will be found in the detailed treatment of the domestic architecture of the city to be published separately. A few advance judgements are given here simply to enable the fortifications to be correlated with the occupation sequence. They doubtless involve many errors that the thorough consideration of the house-architecture may be expected to set at rights and certainly are very far from being final. As here presented they are simply based on an examination of the sections and have drawn very heavily on the preliminary assessments of the pottery evidence. Because this is so essentially a preliminary statement and because I do not wish to prejudice the final judgement, in the plan (FIG. 24) I have incorporated all the principal building remains from Middle Geometric times until the late seventh century B.C. without differentiation, though not normally those of earlier or later date. Their significance will emerge more clearly with the publication of the individual plans of the different building periods drawn up by our Turkish colleagues, of which FIG. 24 is a simplified conflation.

[206] Extending, if we may judge from the probe in Jxviii–xix (pp. 9 and 39), far down beneath modern sea-level.

[207] p. 68 and PLATE 8.

[208] PLATE 9, FIG. 24 in 'window' *b*. The position of another probe through the Wall 1 fill to this Monochrome debris is indicated by the 'window', FIG. 24, *c*, but neither of these cuts is shown to its full extent in the interests of not obscuring the later walls above.

[209] See the section, FIG. 25. I regret that I have not a detailed north–south section of this cut to hand and so have to proffer an east–west one. This, too, has its idiosyncrasies, the topmost seventh-century level being shown on the axis of the stepped cellar, but all the levels beneath it as they appear in the south face of the cut.

[210] p. 102.

[211] In the small areas cleared no traces of stake holes for a palisade or similar defence work were observed. There may, however, have been localized terracing. To the north-east of this area (see the section, FIG. 25) there is a considerable depth of Protogeometric occupation on the edge of the *tell* and the Protogeometric and Early Geometric burnt strata at this point do not slope down towards the north but, if anything, slightly upwards. Whatever the cause, this area seems to have blossomed into the highest part of the *tell* in the early Iron Age.

[212] The terms 'Early', 'Middle', and 'Late Geometric' as used in this account are those of the preliminary pottery classification. It is to be observed that the Early Geometric phase as then defined may represent a much shorter period than the middle and late ones.

[213] pp. 40 and 102.

[214] pp. 41, 122.

[215] On FIG. 24 the area occupied by this fill is shown in black.

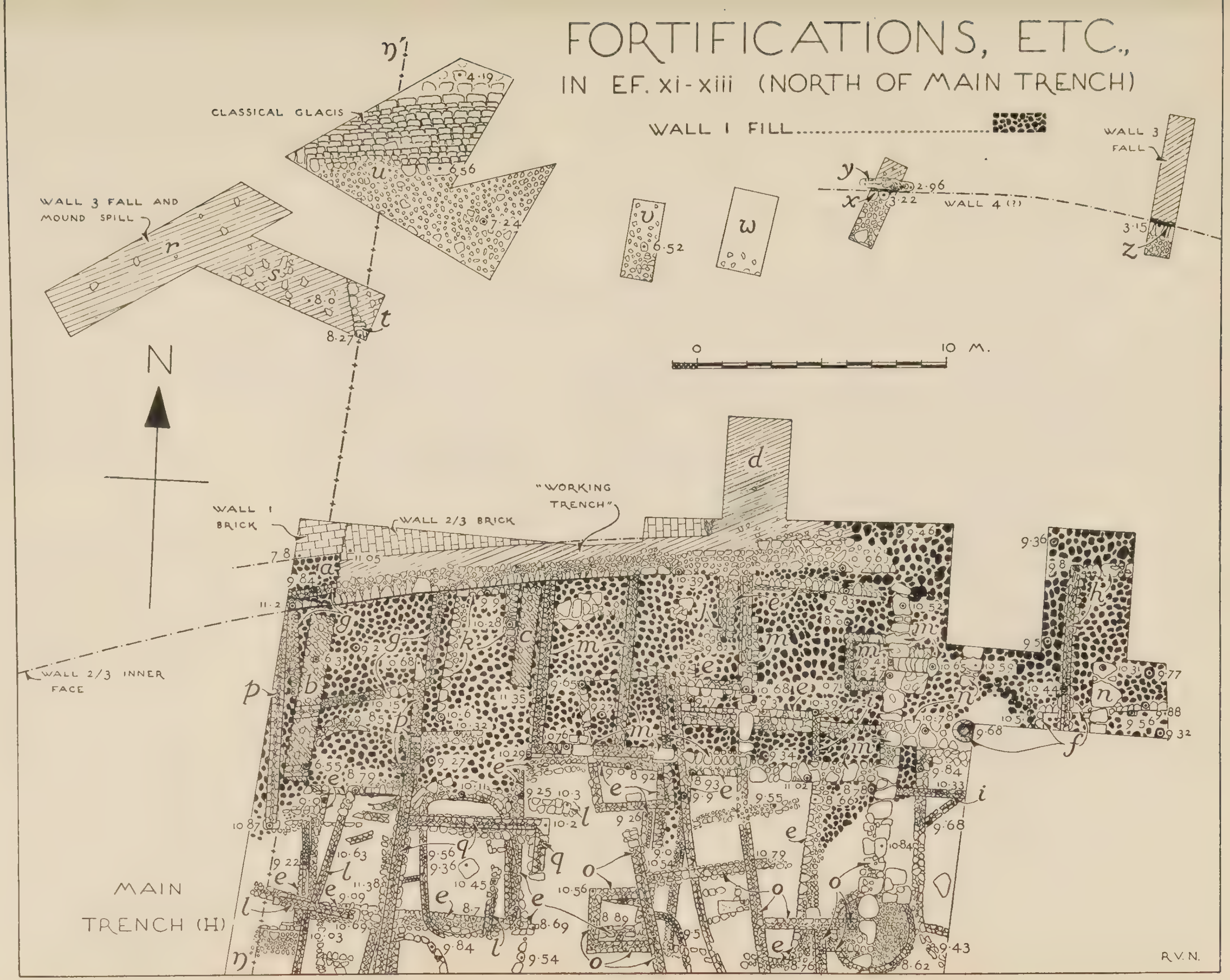

FORTIFICATIONS, ETC.,
IN EF. xi-xiii (NORTH OF MAIN TRENCH)
WALL I FILL
WALL 3 FALL
CLASSICAL GLACIS
WALL 3 FALL AND MOUND SPILL
WALL 4 (?)
0
10 M.
N
WALL I BRICK
WALL 2/3 BRICK
"WORKING TRENCH"
WALL 2/3 INNER FACE
MAIN TRENCH (H)
η'
η
a
b
c
d
e
f
g
h
i
k
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z
4·19
6·56
7·24
8·0
8·27
6·52
2·96
3·22
3·15
7·8
9·84
11·05
11·2
9·46
9·36
9·5
9·77
9·88
9·56
9·32
9·68
10·87
9·22
10·63
11·38
9·09
10·69
10·03
9·84
9·54
8·69
10·56
8·89
8·76
8·62
9·43
9·68
10·33
9·84
10·84
10·79
9·55
11·02
10·54
9·26
10·2
9·25
10·3
9·56
9·36
10·45
8·7
6·55
8·79
10·11
9·27
10·6
10·32
11·35
9·65
10·39
10·28
10·15
10·52
10·65
10·59
10·44
10·31
10·78
10·68
9·34
R.V.N.

Fig. 24

platform as simply to make good the erosion that had taken place over the long period in which the fortifications had been neglected. However, more of this stone fill was piled in than was necessary, making the ground-level up against the wall higher than the existing occupation platform. Indeed, this fill was even packed in over the very high ground to the east,[216] though admittedly here it did not extend very far into the south, forming a blunt wedge-shaped mass of river boulders. For many years this stone fill stood well above the ground-level to the south, and its southerly limits were subject to the successive nibblings of stone-plunderers and pit-diggers (PLATE 9). Further, when houses were built upon it they tended to have their floors at the lower level then obtaining,[217] so that a series of basement-like structures resulted in, as it were, 'casemates' where the Wall I stone fill had been dug away to receive them. To judge from the pottery in it and the circumstances of its laying, this stone fill was contemporary with the Wall I mud-brick to the north. Its relation to the occupation strata to the south permits an even greater precision in fixing the upper and lower limits for its laying. As may be seen in Section η–η' (PLATE 9), the undisturbed part of it overlay a Protogeometric stratum sealed by burning. The small accumulation above the burning under the south edge of the Wall I fill was of earliest Geometric date. The latest pottery in the fill itself was also Early Geometric. The rectangular basement-like houses sunk in it have already been mentioned (FIG. 24, *e*). They were not all built at exactly the same time and some of them had a very long life, but they were all subsequent to the laying of the Wall I stone fill and the earliest of them date back to a very early stage in the Middle Geometric period. Thus a date for this section of Wall I at about the beginning of the Middle Geometric phase seems to be assured.[218] This Wall I stone fill consisted mainly of river stones but included some worked pieces. Those shown on PLATE 19 *a* are pieces of some interest from the η–η' section, consisting of a saddle quern and two cupped door-socket stones. Probably all are of Protogeometric or Early Geometric date, though the possibility that they may originally have come from Monochrome levels, where such pieces are also attested,[219] cannot be ruled out.

A further rectangular basement-house was sunk into the Wall I stone fill to the north-east (FIG. 24, *f*; FIG. 25), this time apparently with stone bases for an internal timber frame. This appears to have been a rather later construction continuing in use into Late Geometric times. A great sunken pithos to the west seemed to be contemporary.[220]

Apparently no traces of Wall 2 have survived on the η–η' section line, such of it as had not collapsed in the earthquake being apparently cut away to provide a bedding for the Wall 2/3 brick.[221] But there seems little doubt that there was once a Wall 2 line here, since it must have been Wall 2 that originally revetted the great mass of brick debris[222] that covered what survived of Wall I and the Wall I stone fill, and raised ground-level in this area to between 9·5 and 9·8 m. above sea-level. On top of this a Late Geometric house (FIG. 24, *g*; PLATE 9) was built around the middle of the eighth century[223] and it seems probable that the now-vanished Wall 2 line must have been built by that date.

---

[216] n. 211 above, FIG. 25.

[217] But there seems, quite apart from this, to have been something of a fashion in sunken floors in the early Greek levels.

[218] See also p. 122.

[219] Saddle querns occur throughout. A similar cupped door-socket stone was found in the tenth monochrome level in Jxviii–xix.

[220] This jar may belong with a great depot of sunken pithoi further to the west, apparently representing a major store of pre-Protocorinthian Late Geometric date. For simplicity, these have been omitted from the plan, FIG. 24.

[221] This seems the most likely interpretation. See, however, p. 126.

[222] Entirely of pre-Protocorinthian date.

[223] It seems to have been abandoned before the end of the century, perhaps around the end of the third quarter, yielding not only local vases and early Ionic graffiti but also imported Attic Geometric and Protocorinthian wares on its floor. The walls of this house may be seen at the bottom of PLATE 19 *b*. For Protocorinthian pottery from its floor see p. 139 (Group D—the building had been assumed to be apsidal until the remainder of it was cleared in 1952).

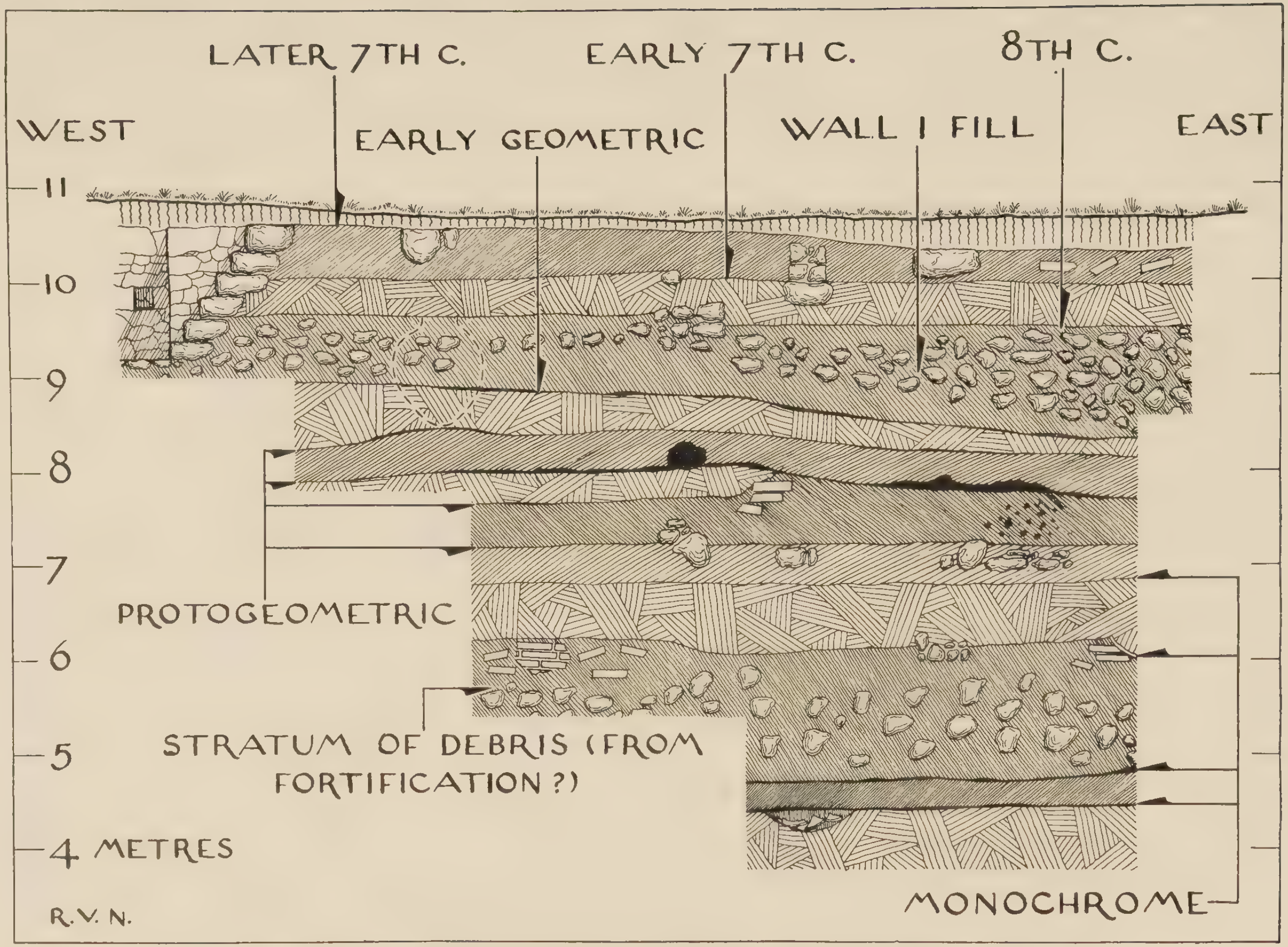

LATER 7TH C.
EARLY 7TH C.
8TH C.
WEST
EARLY GEOMETRIC
WALL I FILL
EAST
11
10
9
8
7
PROTOGEOMETRIC
6
STRATUM OF DEBRIS (FROM FORTIFICATION?)
5
4 METRES
R.V.N.
MONOCHROME

Fig. 25. Section of the deep-level probe in Exii–xiii, east of the stepped cellar

The next circuit wall met with at this point seemed to be about contemporary with that to the north-west of the temple[224] and so, like it, has been named Wall 2/3. It does, however, present some difficulties in interpretation. Of the parts of this wall cleared in the η–η' section (PLATE 9) apparently the mudbrick 'core' was laid first of all, the Wall 1 brick and the debris above it being cut back to receive it. Above the ground-level then obtaining this brick must have presented a temporarily free-standing south face with a slight batter. The individual bricks measured 0·51 × 0·3 × 0·07–0·08 m.[225] and were laid in alternating courses of headers and stretchers. A curious thing about this mudbrick was that it yielded no pottery later than an early stage in Late Geometric, so that it is not surprising that it was originally taken as the missing Wall 2 construction.[226] However, a careful consideration of the section (PLATE 9), where the evidence is shown as clearly as is possible, will, I think, suggest that it was laid as an original part of one and the same construction as the 'working trench' and stone face to the south, and these latter were not built until the second quarter of the seventh century, as is shown alike by the pottery found in them and by the sequence of strata against the inner face of the wall .

This inner face foundation was a hammer-dressed rubble-Lesbian construction of andesite, of which a maximum of four courses were preserved on a projecting footing of undressed boulders. Apart from the fact that they were very much more massive, both face and footing very closely resembled the construction of house-walls of around the middle of the seventh century.[227] The footing reflected the ground-level of the second quarter of the century, riding up over a 'hump' apparently created by the debris from the east wall of the Late Geometric house (FIG. 24, *g*) and having its east part, where it had survived erosion, stepped up much higher still. Behind the face was packed a fill of river stones. The space between the north edge of this and the south edge of the brick 'core' was perhaps too narrow to permit the laying of further mudbrick. In any case, like the similar 'working trench' in Wall 3 in Section λ–λ',[228] it was simply filled with brick debris, presumably spoil from the bedding of the 'core'. Above this, however, the mudbrick of the 'core' was extended right in to the stone fill behind the face.

It remains to consider the relation of this Wall 2/3 inner face to the houses immediately to the south of it. We may distinguish the traces that were earlier than it and were either directly overlaid by it (FIG. 24, *j* and *k* and perhaps originally also *h*) or were overlaid by other buildings that were contemporary with it (FIG. 24, *h*, *i*, *j*, *l*) from those houses that were not constructed till after the building of Wall 2/3 (FIG. 24, *m*, *n*, *o*, *p*, *q*). Traces of several rectangular houses occurred in this area, apparently dating to the years immediately after the presumed earthquake of around 700 B.C. Most of these had been badly mauled in the erection of the heavier constructions that succeeded them. The best-preserved was that at FIG. 24, *h*, dating to the very beginning of the seventh century B.C. Apparently more or less contemporary were those at FIG. 24, *i*, *k*, and *l*. It is uncertain whether the stub of wall (*j*) was of Late Geometric or early seventh-century date. After the Wall 2/3 inner face had been constructed various new houses, replacing the humbler early seventh-century structures, were built up against it. The most noteworthy of these was the large building, FIG. 24, *m*. Although nothing later than the earthquake debris was found under the floors of its two more westerly rooms, yet the fact that they were built on to the Wall 2/3 inner face showed that they could be no earlier than the second quarter of the seventh century. It seemed somewhat obscure whether the easterly room with the underground cellar belonged to this building or to that farther to the east (FIG. 24, *n*). The latter (*n*) was apparently not built until the later seventh century, whilst that farther to the south (*o*) cannot have been constructed until immediately before the Lydian capture of the city. The fine house *q* was apparently built in the third quarter of the seventh century and seems to be later, though perhaps only a little, than the house built to the north-west of it (*p*) abutting on the city wall inner face.

---

[224] pp. 79, 125 f.

[225] Cf. p. 103.

[226] As against the lower part's being taken for Wall 2 and the upper part for Wall 2/3 speaks the apparent unity of the pack.

[227] PLATE 19 *b* and *c*, taken during the excavation by our Turkish colleagues before the deep sectional cut was made to the north-west.

[228] p. 47.

Thus the construction of Wall 2/3 in this area seems fairly well pegged to about the second quarter of the seventh century B.C. The fault-line splitting its mudbrick (PLATE 9) is presumably the product of the same sixth-century earthquake as that which did much damage to the north of the temple.[229] Further, the whole of the mudbrick 'core' appeared to have suffered a total collapse towards the east (FIG. 24, *d*). The dissolved and fallen mudbrick that came down from the Wall 2/3 superstructure spread out to the north[230] and to the west became merged with the debris that had washed down from the siege-mound.[231] A wall foundation built on top of this fallen mudbrick was apparently of classical date (FIG. 24, *t*; PLATE 9). Towards the west the steep slope that this accumulation presented was much more marked because of the neighbouring siege-mound. Here it was revetted by a stepped glacis construction of small andesite blocks (FIG. 24, *u*; PLATE 9).[232] The pottery from the fill of this structure was nearly all of the usual seventh-century spill types, but did include a fragment of a sixth-century jug and part of a black-figured lid of about the beginning of the fifth century B.C.[233] Most probably the glacis was but a substructure and carried above it a continuation of the outer wall face discovered farther to the east (FIG. 24, *x* and *z*) which seems best considered of Wall 4 date.[234] The glacis had collapsed somewhat towards the west. The modern terrace fill obscured its easterly limit (FIG. 24, *v* and *w*).

To the north-east (at FIG. 24, *x* and *z*) an andesite wall face was found, in coarse hammer-dressed rubble-polygonal masonry and backed by stone fill. The only dating material that occurred was the seventh-century pottery in the fallen Wall 2/3 mudbrick under and outside it, but its position and the manner of its construction argued very strongly that it was the continuation of the Wall 4 line observed to the east.[235]

Immediately outside this wall face was found a human skeleton (FIG. 24, *y*).[236] Associated with the body were carbonized traces of one or more wooden beams and a few iron nails about 0·1 m. long, but nothing to suggest a coffin. The body was deposited in a shallow, rounded hole scooped out of the fallen Wall 2/3 mudbrick and the soil over the bones can barely have covered them. Above, the whole was sealed by further dissolved Wall 2/3 mudbrick that had come down after the wall, at this point identified as Wall 4, had perished. The body lay on its back in an extended position, but the jaw had been dislodged and was recovered from the region of the pelvis. The deposition of this body cannot be dated, except for the fact that it must be later than the building of the wall identified as Wall 4. It does not seem to have constituted a normal burial.[237]

---

[229] pp. 79, 134.

[230] e.g. outside and under the later wall face at FIG. 24, *x* and *z*.

[231] FIG. 24, *r* and *s*, PLATE 9; on the siege-mound see pp. 88 ff.

[232] See also PLATE 19 *d*.

[233] But these are isolated pieces and seem insufficient in themselves to establish that this is more of the Wall 3/4 construction (p. 81) as opposed to being of Wall 4 date.

[234] The whole of the glacis was fully exposed up to the time of the abandonment of the city in about the third quarter of the fourth century B.C., as was shown by the pottery found against it.

[235] p. 81.

[236] I am indebted to Professor M. S. Şenyürek for making a preliminary pronouncement on these bones as being apparently those of a man in his forties and as showing a degree of fossilization, as compared with the early Hellenistic sarcophagus-burial in N3.xiv4–5, that suggested that they were of a respectable date in antiquity.

[237] It seems to represent a somewhat summary disposal of remains (perhaps those of an executed criminal?).

10. The Mound, including Sections β–β', ϵ–ϵ', and ζ–ζ' (EFxi—Kv–x)

The north-west corner of the city is completely dominated by a great artificial mound which even today, after more than two and a half millennia of erosion, stands to a height of some 21·35 m. above modern sea-level.[238] The shape of the mound has been somewhat modified by ancient[239] and modern terracing; also, its great spread to the east and west[240] has probably been partly the product of the erosion of its top, which also deposited quantities of debris over the original city itself.[241] This mound was not a stratified accumulation like the rest of the *tell*, but represented one simultaneous fill of which the latest material throughout was contemporary with the destruction of the city by the Lydians. Indeed, it seems not improbable that it represents the siege-mound with which Alyattes forced the defences and captured the city.

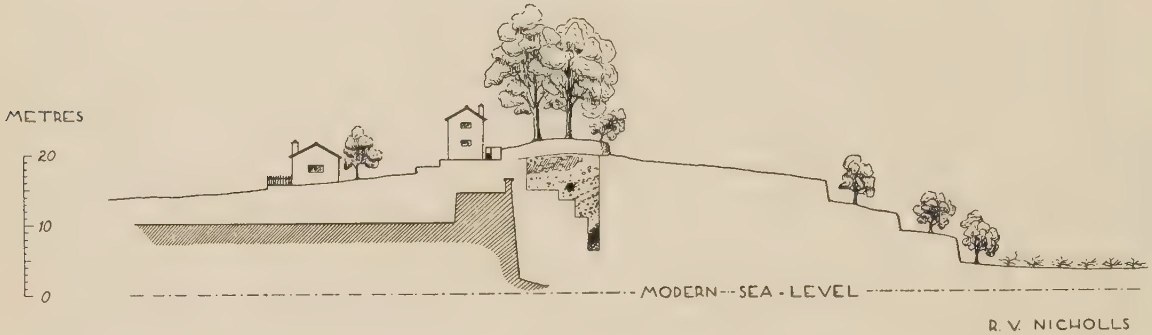


Fig. 26. Section β–β'. the modern shape of alyattes' siege-mound approximately on its north–south axis in terms of the conjectured position of Wall 3

Soundings had already been made in the mound by F. and H. Miltner.[242] The work of the present expedition at this point had to be on a very limited scale,[243] but nevertheless a useful body of material has been gathered suggesting what may have happened.

The inner face of Wall 2/3, which apparently still continued as the city circuit in this area at the close of the seventh century B.C., was cleared at the north of the main occupation probe.[244] How thick this wall was is not known, but if it be assumed to be of average width and to have continued the curving course that its inner face follows to the north of the main probe, then the bulk of the mound should lie outside of the original city. This is confirmed by the probe in Gix–x, which, certainly in its north part and probably entirely, lay beyond the edge of the city. The exact position of this edge has not yet been established, but the type of situation that appears to have obtained is shown diagrammatically in FIG. 26. Here the probable approximate position of the city limits is shown in terms of the modern profile of the mound on its north–south axis. The strata suggested by the west section of the cut in Gix–x are shown in terms of both, although this probe lies a short way to the east of the present axis of the mound.[245]

---

[238] Formidable enough when one remembers that the top of the occupation platform inside the city even at the close of the seventh century B.C. when this mound was built only occasionally exceeded 10 metres above sea-level. On the mound see further pp. 24 f. and 128 ff.

[239] e.g. the classical stepped glacis, p. 87.

[240] See Section α–α', p. 2, FIG. 1.

[241] Extending about as far as the 12-metre contour on the plan of the *tell*, PLATE 74.

[242] Op. cit. 167–8; H. Miltner, *Eski İzmir* 16–17; see p. 36 above. To the traces of beams of round section found by Dr. Baki Öğün and described below should probably be added the square ones reported by the Miltners.

[243] The full sectioning of the mound and the unravelling of what was probably a crowded and exciting sequence of events must await the advent of subsequent investigators with resources many times greater than those at our disposal.

[244] pp. 86 ff.

[245] It was so located to avoid the Miltners' probes (n. 242

FIG. 27 shows the west (ϵ–ϵ') and north (ζ–ζ') sections of this cut in greater detail.[246] As stated above, in date the fill represented one uniform mass. It consisted mainly of soil, mudbrick debris, stones, and carbonized wood. Between 7 and 11 metres above sea-level three burnt strata occurred (FIG. 27, *j*, *k*, *l*) associated with mudbrick debris. Above the lowermost of these the bricks were in large coherent masses, which might imply that they were not normal mound-fill but had been brought down from the city wall to the south by sapping or ramming. Dissolved mudbrick was again common above 16 metres above sea-level, associated with carbonized branches (FIG. 27, *e*) or in small pockets, perhaps as it had been flung down from baskets (FIG. 27, *b*). Although boulders also occurred, a large proportion of the stones in the fill had been worked. The carbonized wood (FIG. 27, *a*, *e*, *f*, *g*, *h*, *i*) consisted partly of the branches of trees that had been thrown in holus-bolus, partly of small poles between 0·04 and 0·08 m. in diameter, and partly of large straight regular beams of circular section averaging about 0·2 m. in diameter.[247] Sometimes where the wood had decayed into dust the earth impression still showed the graining clearly.[248] At the north-east corner there occurred a carbonized stratum (FIG. 27, *c*) and a layer of pebbles and sherds (FIG. 27, *d*). The whole of this fill simply seemed to consist of masses of debris lying in the meaningless positions in which they had come to rest after having been tipped in from the north. However, they showed a distinct slope up from south to north, indicating that the original crown of the mound lay farther out to the north.[249] The mound-fill cleared in this small cut yielded three iron spearheads and thirty bronze arrowheads[250] scattered throughout it.[251]

Two further small probes (F5.viii9–F7.viii8 and F.ix1–F3.ix) revealed more of the mound-fill, including patches of dissolved mudbrick, here sloping down steeply from south-west to north-east. More of it was located to the east (E9.x4–F2.x2), sloping down to the north and covered with a collapsed fill of stones, perhaps more of the backing of the classical glacis.[252] Here the mound-fill, like its spill to the east[253] and that overlying the city to the south and spreading out to the west,[254] yielded many more arrowheads.[255]

It would seem, then, that at the time of the Lydian attack an enormous mound of debris was piled up, initially some distance out to the north of the city's circuit and under continual bow-fire from its defenders. Perhaps the original siting of the mound well out from the wall was to put it out of range of heavier missiles, the sappers being probably protected as far as possible from arrows by screens of branches and hides.[256] A race to achieve elevation then presumably

---

above) as well as embarrassment to any subsequent sectional work on the axis itself. Actually, however, there had been previous excavation at this point, too, represented by a trench 2 metres or more wide and reaching in part to a depth of 15·7 m. above sea-level. It was dated by a modern Greek orthodox medallion. This probably extends to the ϵ–ϵ' section line (FIG. 27) just south of the north-west corner of the probe where the strata of mudbrick debris have vanished, but the limits of the disturbance could not be clearly distinguished when the section was drawn (see n. 246 below).

[246] These are by no means as informative as I should like them to be, having had to draw them at the end of a long rope dangling over a crumbling abyss. Probably the masses of compact soil shown in the sections cloak many gradations in the fill that it was not possible, under the circumstances, adequately to differentiate.

[247] PLATE 20 *a*, from a photograph by D. T. D. Clarke, shows the impression left by one of them in the south-west part of the cut.

[248] As with the nexus of beams and branches, PLATE 20 *b*, photographed by D. T. D. Clarke.

[249] The slope from east to west shown by the burnt stratum, FIG. 27, *j* may well be fortuitous, although it is not impossible that there may have been more than one original crown to the mound.

[250] p. 131 below.

[251] Except that no weapons were recovered from the narrow cut extending down from 11 metres above sea-level, although this circumstance may be entirely due to the smallness of the area tested.

[252] Cf. p. 87.

[253] p. 87, FIG. 24, *r* and *s*.

[254] pp. 91 ff.

[255] A preliminary analysis of the distribution of the different arrowhead types over the surface of the *tell* and outside it is given on pp. 129 ff.

[256] Many of the branches and beams that have toppled down to the south in the ϵ–ϵ' and ζ–ζ' sections may have served such a purpose before they were flung holus-bolus into the fill. This seems even more likely in the case of the coherent mass of timber reported by the Miltners (see n. 242 above).

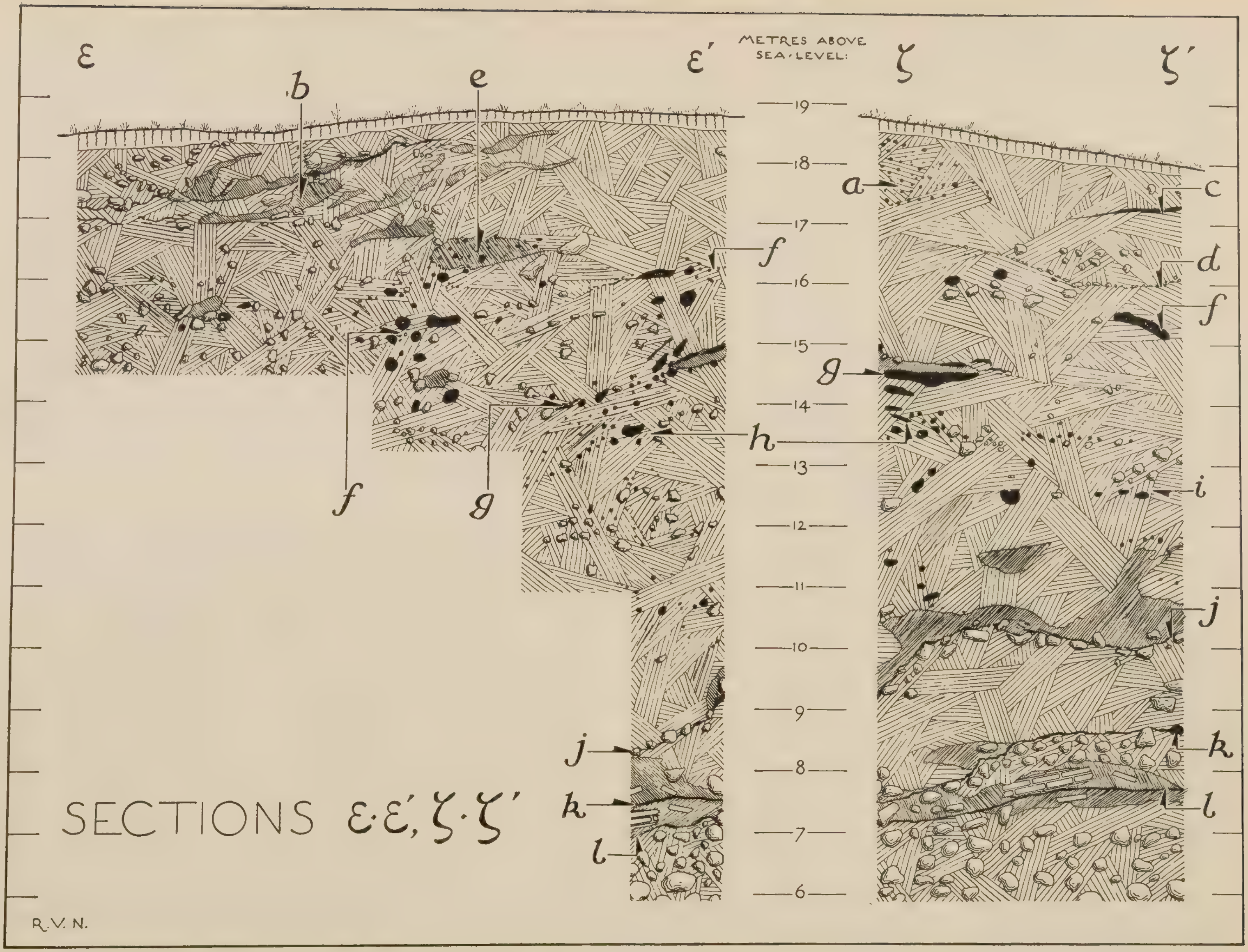

ε
ε′
METRES ABOVE SEA-LEVEL:
ζ
ζ′
b
e
a
c
d
f
f
f
g
g
h
i
j
j
k
k
l
l
19
18
17
16
15
14
13
12
11
10
9
8
7
6
SECTIONS ε·ε′, ζ·ζ′
R.V.N.

FIG. 27. SECTIONS ε–ε′, ζ–ζ′

followed, both the mound and the fortification wall being raised prodigiously. It is to be assumed that eventually the mound sufficiently overtopped the wall to permit the attacking archers mounted on it to bring so deadly a covering fire to bear on the fortifications opposite[257] that their sappers were enabled to fill in the gap between mound and wall and so open a path into the beleaguered city.

The mound-fill contained great quantities of occupation[258] pottery. The latest of this was of about the close of the seventh century B.C., but the whole of the seventh century was liberally represented and quite a volume was as early as its commencement. It is also to be remarked that the worked stones, the long round beams, and most of the mudbrick debris probably also came from the demolition of houses. Apart from such countering superstructures as had been erected by the defenders, the whole of the mound-fill must have been collected from outside the fortified city. It appears likely that it was gathered from the extensive extramural settlement that seems to have sprung up around the beginning of the seventh century B.C.[259] Evidence of this has been found on the lower parts of the hillside opposite the city to the west and north, as well as a distance out to the east of the *tell*, presumably on the far bank of the estuary.[260] Also, the low ground more directly to the north[261] and north-east of the mound seems to have been built on as well at this date, this more westerly part of what in prehistoric times may have been the inner harbour of the city having become by then silted up. In the small probe in Avii a seventh-century stratum lay between modern sea-level and 0·25 m. above it over a virgin accumulation of river clay. Faint Roman traces occurred above at about 0·3 m. above sea-level, covered by more than 2¼ m. of sterile sandy soil that had been deposited since.

II. TO THE WEST OF THE MOUND (Kv–x—Mix–xi and Outlying Probes in Gi, Hi–ii, Jiv, and Jvi)

Much less is known of the westerly limits of the city than of those to the north, east, and south, partly because of more limited exploration, partly because of the impingement of the modern road from Bayraklı to Bornova, bounding our excavation area on this side.

A probe between K7.viii7 and K9.ix2 revealed a few large fallen face-blocks overlying a huge intact mass of fallen mudbrick, apparently the consequence of the simultaneous collapse of a large part of the superstructure of a fortification wall. On its north-west edge (the only one revealed in this probe) it was about 2½ m. thick. The bricks were of Wall 2 dimensions and the latest dating material from them was of the Early Protocorinthian stage of Late Geometric.

However, this huge chunk of fallen mudbrick overlay further less coherent mudbrick debris on top of which had been flung occupation refuse of the seventh century B.C. All had apparently come down from a crumbling wall line a little farther in to the east. The fact that this was already in a state of decay in the seventh century may suggest that it was of Wall 2 rather than Wall 2/3 date.

This wall line apparently marked the edge of the original *tell* and revetted the high occupation platform within. The corner of a seventh-century house built just inside on top of the platform was uncovered in K9.x–xi.[262] This house showed a similar orientation to those of the midseventh century in the larger probe to the east in Kxi.[263] Its floor was at 8·88 m. above sea-level, so that ground-level had been somewhat terraced down in the intervening buildings from the 10·18 to 9·8 m. obtaining in Kxi. Even so, the height of the platform formed a marked contrast with the lowness of the ground outside it to the west[264] before the collapse of the wall bounding the *tell*.

---

[257] This fire, too, seems evidenced by the arrowheads found inside the city to the south in the probe in Kxi. See p. 132.

[258] The incidence of loomweights, wash-basins, oven-dishes, &c., seems to preclude the possibility that it might have come from graves, the only tenable alternative.

[259] pp. 15, 125, 128.

[260] PLATE I, where the area apparently involved is shown stippled.

[261] p. 92.

[262] Like the seventh-century houses to the north of the larger probe in Kxi, it was very well preserved as a consequence of having been buried under the spill from the mound. Cf. pp. 88 ff.

M–M1.ix8–9 was simply occupied by a mass of dissolved mudbrick and scattered stones sloping down towards the west. Further dense dissolved mudbrick that appeared to have come down in the seventh century was met in M1.xi4–M4.xi2. Here it had subsequently been revetted by two terrace walls, the more easterly of which carried a house-wall above it. The orientation of these might be taken as suggesting a sixth-century date for them,[265] but nothing later than the late seventh century B.C. was found in the material backing them. The date of the structures uncovered by F. and H. Miltner in this vicinity seems uncertain.[266]

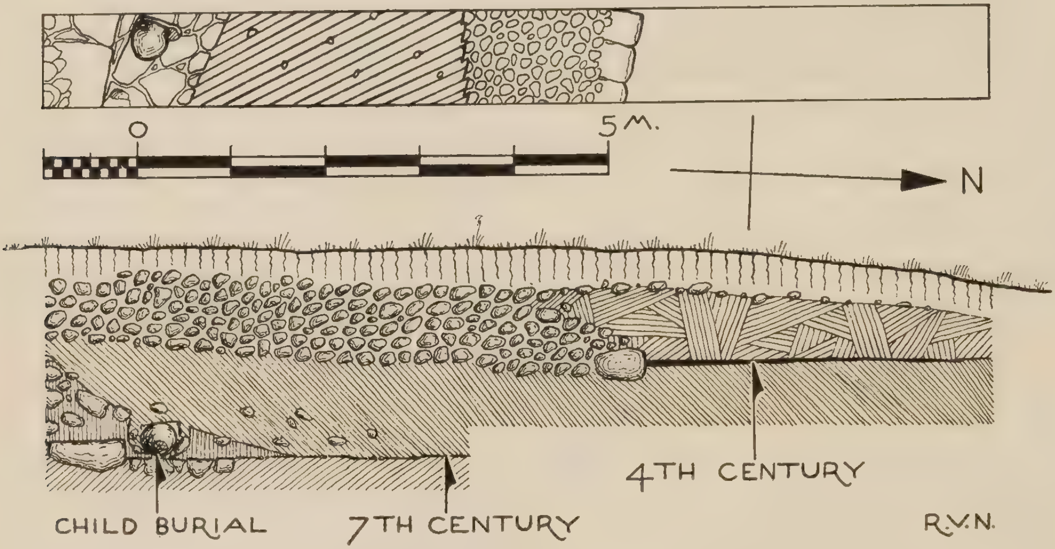


Fig. 28. Plan and section of supplementary probe made in 1952 in Kvii

The account of Prokesch von Osten[267] records the existence in 1825 of a stretch of fortification wall on the low spur running out from the mountain-side to the west of the *tell*. This wall has now vanished underneath the modern village and could only be very approximately indicated on the plan of the environs[268] in terms of Prokesch's measurements and the reported finding of a few face-blocks in the digging of house foundations. How this system may have linked up with the fortifications of the west side of the *tell* is also most uncertain. A series of probes in Gi, Hi–ii yielded only one large isolated block overlying further traces of the seventh-century extramural settlement,[269] whilst investigations in Jiv produced only signs of occupation in the fourth century B.C. and later. However, a complex of trenches in Kv–viii revealed a fill of small river stones and quarry chips of the fourth century B.C. This had been badly mutilated by late Hellenistic and early Roman occupation on top of it, but it seems possible that it may represent the core of an otherwise plundered wall running up the most westerly-projecting ridge of the hillside opposite. The plundering was presumably of Hellenistic or Roman date. In order to clarify the situation further a small supplementary sectional cut was made in this area in 1952.[270] The findings made in this probe are shown in FIG. 28. Under the fourth-century fill lay quantities of seventh-century dissolved mudbrick with, to the south, fallen stone fill. In this a small child had been interred in a large cooking-pot. Below to the south lay a seventh-century stone pavement leading to an andesite step. In this area three surviving face-blocks of the fourth-century construction were found in position. They were of andesite and were of a well-fitted, convex-faced, adze-dressed ashlar construction, perhaps somewhat light for a fortification outer face.[271] To judge from an amphora-toe found in its stone fill, this structure could not date before the early fourth century B.C.

---

[263] Indeed, if the whole area was as densely built up as at that point, then probably to the west of the block partially cleared in Kxi there may have run a narrow lane followed by another block two houses deep, separated by a further lane from the house in K9.x–x1. It would seem unlikely that there was room for further building on the platform beyond again to the west.

[264] In K7.viii7–K9.ix2 the mudbrick debris, possibly of Wall 2 date, continued on down below 3 metres above sea-level.

[265] As compared, e.g., with the buildings to the north-east in Kxi.

[266] Op. cit. 167; p. 36 above.

[267] See p. 36 and the references there given.

[268] PLATE 1. On the question of the wall lines possibly linking this area with the *tell* see also pp. 128 and 135 f.

12. THE SOUTH-WEST SIDE OF THE CITY (Mix–xi—Pxxii–iii)

In Nx–xii a chance discovery brought to light a beautiful stretch of seventh-century B.C. walling (FIG. 29). At its south-east end (FIG. 29, *b*) this had been broken off abruptly, probably by stone-plundering. Its face was here preserved to a maximum height of 1·4 m. in a sophisticated, adze-dressed Lesbian masonry in andesite on a projecting hammer-dressed footing.[272] The stone fill behind this face (FIG. 29, *a*) was a narrow wedge-shaped mass, apparently because the face itself was revetting quite a steep slope.[273] The large chunks of rock in front of the face were considered to be a subsequent accumulation.

This face extended over 33 metres toward the north-west (FIG. 29, *c*, *d*, *e*, *g*), mostly preserved about two courses high, such of it as had stood above classical ground-level having apparently been plundered. The footings of the whole face sloped down to the north-west at an angle of about 1:21 and continued to project in the same way. The masonry above showed a tendency to have its lower course in trapezoidal work developing into Lesbian above. It was backed by a fill of medium-sized river boulders more than 4½ m. wide.[274] Beyond FIG. 29, *g* it turned back at right angles to the south-west and continued in this direction (FIG. 29, *i*) out under a later house-wall and the modern road. It was still backed with an extensive stone fill (FIG. 29, *h*).

The stone fill behind the face (FIG. 29, *f*) yielded a consistent mass of dating material of the early seventh century and it may be that much of this wall is of that date. However, the backing of the most south-easterly part (FIG. 29, *a*) was of the late seventh century B.C. Either the body of earlier material to the north-west is irrelevant or else this sophisticated shallow-backed part to the south-east (FIG. 29, *b*),[275] reminiscent of late seventh-century work in the temple pylon,[276] in fact represents a subsequent addition.

It is to be observed that this construction lies beyond the limits of the original *tell*. If it formed a part of the Wall 3 circuit it was by no means any ordinary part. The finish of the masonry and the shallowness of the footings seem most unlikely in a main outer face at this date.[277]

---

[269] pp. 15, 91, 125, 128.

[270] From K.vii6 to K4.vii9.

[271] Thus the possibility that the face preserved may have been an inner one cannot be ruled out.

[272] PLATE 20 *c*, from a photograph by A. G. Hunter.

[273] Probably that already observed farther to the north (p. 92) as being produced by the decay of the wall bounding the west side of the *tell*, perhaps itself a construction of Wall 2 date.

[274] The maximum probed at FIG. 29, *f*. Quite probably there may have been an inner face to this wall here on the lower, flatter ground.

[275] PLATE 14 *c*.

[276] *JHS* lxxi. 248, fig. 7, *to left behind ranging pole*. The reader is also referred to the forthcoming detailed publication of the Smyrna temples.

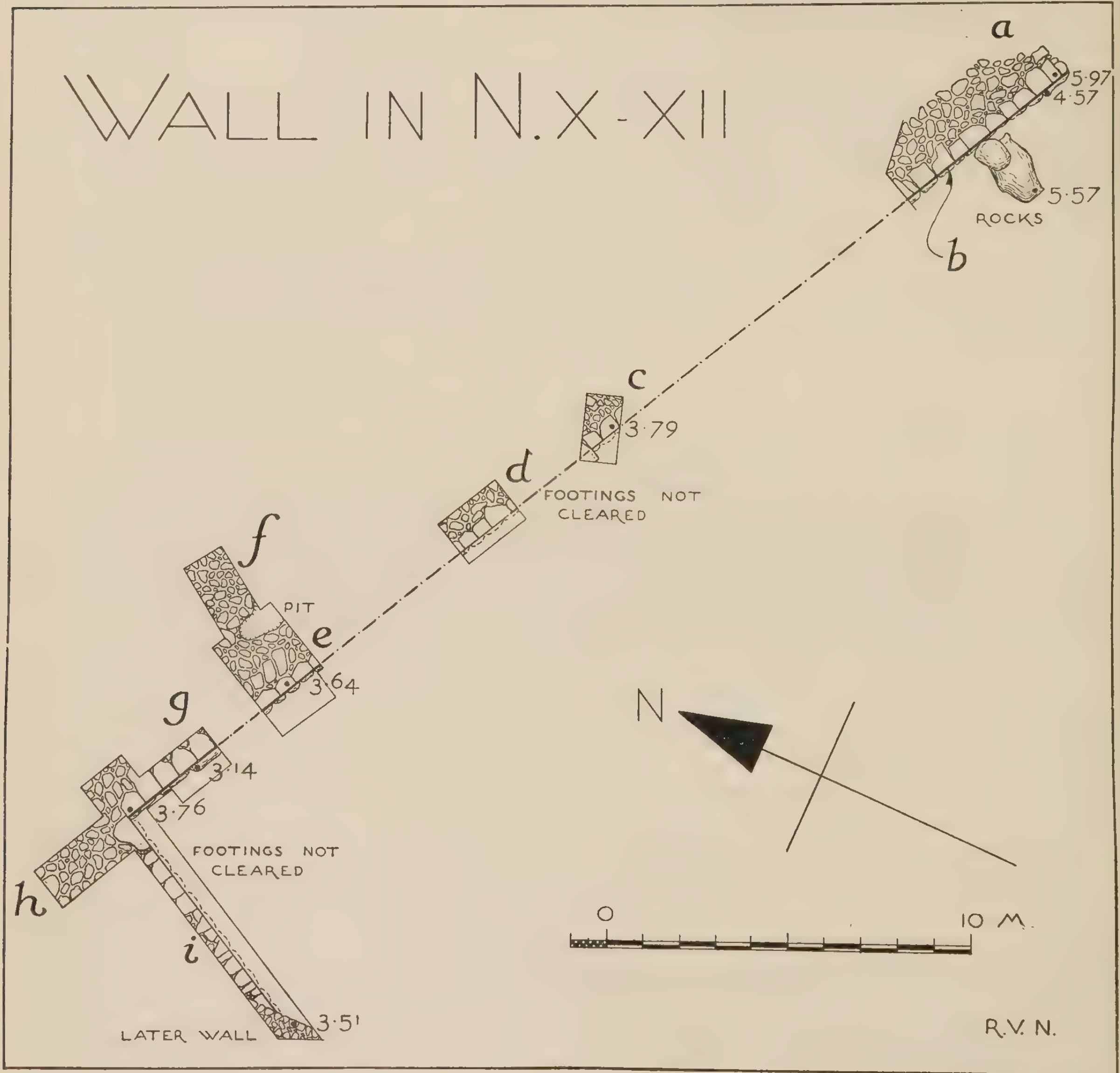


Fig. 29

In the probe in Nxvi, under occupation levels of the fourth and later fifth centuries B.C., was found a great mass of stone and mudbrick debris sloping down steeply from north-east to south-west. It contained pottery of Geometric to late seventh century B.C. date.

---

[277] With so little exploration done no sure interpretation is possible. I can only advance the very tentative suggestion that these walls may perhaps have fronted on an apron-like enclosure behind a main gate. The south-east 'extension' (if such it be) might then have served to revet the side of a road from it up on to the *tell*.

III. MATERIALS AND CONSTRUCTION

1. THE SOCLE

(a) *Earth fill*

The dark soil found on the mountain-side and in the plain seems hardly ever to have been used in mudbricks,[1] although it may have played a role in roofing.[2] Used simply as a fill material it occurred only once in the excavated parts of the fortifications, in the interior of the Wall 1 tower at the north-east gate.[3] For convenience in building it seems to have been packed in in strips as sections of the face were completed. These strips were held in place by thin temporary revettings of river boulders built with a slight batter. Inside the north-east corner of the tower such a revetting ran parallel with the east face under the lower white chip strosis,[4] and another one ran parallel with the north face between the lower white chip stratum and the upper one.[5] The situation is shown diagrammatically in FIG. 30. The earth had been securely rammed into position.[6]

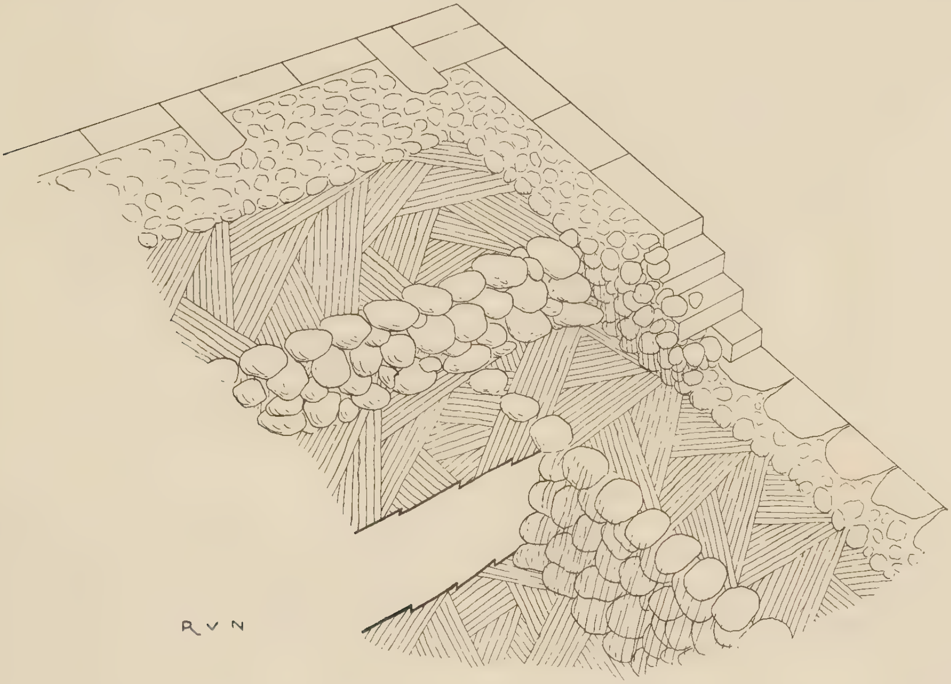


FIG. 30. SOIL PACK (WALL 1 TOWER AT THE NORTH-EAST GATE)

---

[1] An exception, where it occurred several times, was the mudbrick pack at FIG. 10, *d* (p. 56). It is an ingredient in the modern baked bricks from the area.

[2] A heavy stratum of similar hard, dark, clayey soil commonly occurred immediately above the floors of the houses (cf., e.g., PLATE 9). The mudbrick debris from the walls seemed usually to have come down rather later on top of this earth stratum. Perhaps it was used because it did not crack as readily as clay, but I doubt if it could have been rendered impervious without a heavy plastering of clay or some similar material.

[3] p. 70 above; FIGS. 18, *f*, 19; PLATES 8 and 17 *b*.

[4] PLATE 17 *b*.

[5] PLATE 8.

[6] The closest parallel for this type of construction seems to be that afforded by a rather ill-preserved seventh-century circuit wall at Corinth (*Corinth* xv. i, 14, pls. 4.A (*top right*), 51; xv. ii, pl. 60). Here the faces of the socle seem to have been of stone but its 'core' to have been composed of earth fill packed into long chambers (about 5 m. long and 1·8 m. wide) separated by boulder partitions. One may also compare the use of earth fill in later Greek walls, e.g. at Gortys in Arcadia (*BCH* lxxi–ii. 95, fig. 7) and again at Corinth

(*b*) *Stone fill*

The stone packs that occupy a large part of the socles of all the Iron Age circuits do not represent just a loose fill merely tipped in, but are carefully built constructions. Normally the stones that had been used were boulders, presumably gathered from the bed of the nearby stream,[7] and of round or oval shape. These were laid in clay mortar, the whole being thus welded into one cohesive mass[8] the clay greatly increasing the strength of the structure but introducing problems of drainage.[9] In the better examples of fills of this kind as indicated on the diagram, FIG. 31, stones of roughly uniform size had been used. They were laid in horizontal courses, the oval or egg-shaped ones being tilted back at an oblique angle. The Wall 1 and 2 fills examined tended to use medium-sized and, occasionally, even largish river boulders. The Wall 3 fills were more usually of quite small river stones of fairly uniform size. The Wall 4 packs apparently tended to be of small river stones with a liberal admixture of quarry chips.[10]

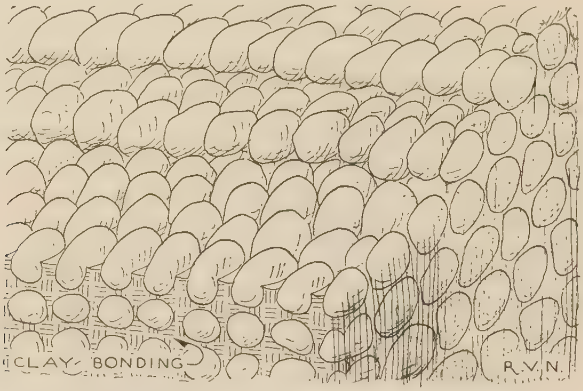


FIG. 31. STONE PACK

(*c*) *Stone faces*

The stones used in the building of the socles of the fortifications are the same as those employed in the temples of the seventh century B.C. They have been tentatively identified as a red and a grey andesite[11] from stretches of the hillside immediately to the north and some two kilometres to the north-west of the city respectively, and a soft white stone, perhaps from the vicinity of Phocaea.

This last was used for ashlar masonry, the blocks being apparently saw-cut for the Wall 1

(*Corinth* iii. ii, 93). I would, however, draw attention to the purity of the earth fill in the Smyrna tower and the way it has been packed in hard. Its resistance to collapse (see PLATE 8) is remarkable. In the excavated parts of the Smyrna fortifications it is unique. On the changed construction at this point see p. 97 n. 17.

[7] pp. 93 f.

[8] Dry-stone fills, like those of the modern terrace-walls around the *tell*, seem never to have been used in the ancient fortifications.

[9] p. 106 below.

[10] However, the Wall 4 fill outside the Wall 3/4 face to the north-west of the temple (p. 81) constituted a very even pack of somewhat larger river stones.

[11] As to the geological identification of these stones, it should be pointed out that we have had no reports on our specimens. A. Philippson (*Petemanns Mitteilungen*, Heft 172, 18) describes the whole of the south slope of the Yamanlar Dağı, embracing the areas of both these quarries, as of andesite. The grey-stone quarries he describes at length; the red-stone ones he does not mention. Other writers have alluded to the local stones as trachyte.

tower at the north-east gate;[12] polishing had partly or wholly obscured the manner of the original working in the case of further such white stone blocks, apparently from Wall 2,[13] and of others used as ties in the Wall 3 face.[14] Elsewhere, adze-work was also attested in the preliminary dressing of this stone[15] and even in its final surfacing.[16] Strictly speaking, the white stone ashlar part of the Wall 1 tower already mentioned constitutes a superstructure, not a socle.[17] For convenience, however, its masonry will also be dealt with at this point. It is deeply to be regretted that this remarkable structure was no better preserved. FIG. 32 is quite a free interpretation of the kind of construction methods apparently involved.[18] The fourth white stone course partly

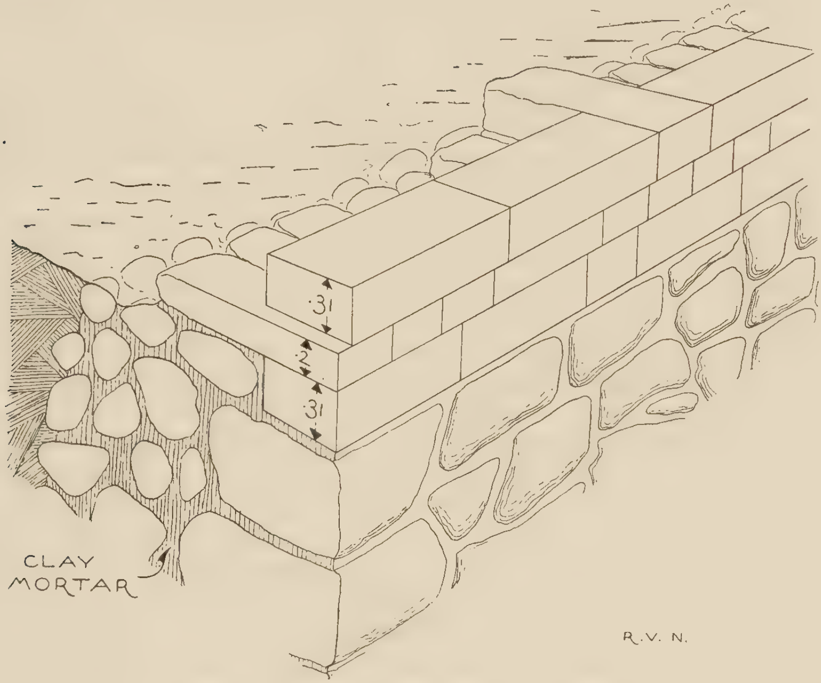


FIG. 32. WALL 1 TOWER ASHLAR (SCHEMATIC)

preserved to the north-west seems to have been of about the same height as the first and third courses. The masonry consists of stretchers which afford no more than a shallow facing to the wall, and of much deeper headers which serve the function of tying the face itself into its backing of stone fill. Courses that were mainly of stretchers seem to have contained occasional headers and courses mainly of headers to have included occasional stretchers. The fine fitting of the ashlar blocks enabled them to be laid dry, but the stone fill behind them was bonded with clay mortar.

---

[12] p. 68; FIG. 19; PLATES 16 *b*, 17 *a*, *b*, 18 *d*.

[13] p. 43.

[14] p. 68; PLATE 16 *a*; FIGS. 16–17.

[15] e.g. by the unfinished column drums from the temple, p. 81, PLATE 18 *b* and *c*.

[16] On the large threshold block, p. 50, FIG. 6.

[17] Basically the andesite socle may be considered as fulfilling precisely the same role here as elsewhere. The change is in the superstructure, where here white stone ashlar with an earth core has been substituted for mudbrick. Such a change in two stages has been argued in the fortifications of the sixth city of Troy and was clearly shown at Tower VI.g (Dörpfeld, *Troja und Ilion* i. 143 ff.; Blegen, Caskey, Rawson, *Troy* iii. 82 ff.), where traces of an earlier mudbrick construction were found preserved. However, in the Smyrna Middle Geometric circuit the all-stone construction at the gate seems to have been an original part of the fortification project, enhancing the beauty and strength of the gate as the most commonly frequented and most vulnerable part of the defences. Presumably considerations of economy prevented its more extensive use as in the all-stone superstructures of Troy VI (see above) and the Phrygian circuit at Gordion (*AJA* lix. 12 ff., figs. 26–27, pls. 6–9; lx. 257 ff., pls. 87–91).

[18] Except that the somewhat irrelevant small, thin spacer-blocks sometimes used in the fitting of the larger ones are not here shown. In arrangement this masonry bears comparison with apparently contemporary but distinctly more regular work in Palestine, e.g. Crowfoot, Kenyon, Sukenik, *Samaria-Sebaste* i, pls. xii. 2, xiii, xiv. 1. But the Wall 1 circuit appears otherwise essentially Greek in conception and perhaps the masonry of the superstructure of its tower is simply a direct local development from Mycenaean ashlar work. The use, however, of an ashlar superstructure may possibly be of Anatolian inspiration (see n. 17 above), but its finish and fitting on this more modest Smyrna construction are far superior in quality to the more ambitious work at Troy and Gordion.

The andesite faces offered a wide variety of masonry, although the simplest, hammer-dressed, rubble work seemed almost timeless and probably represented no more than the easiest way in which this stone might be broken and fitted in all periods. Clay mortar was used liberally or sparingly according to the quality of the fitting. However, on the Wall 1 tower at the north-east gate the free use of a contrasting white clay mortar achieved a highly decorative effect.[19] The masonry of the outer face of the socles was massive but not generally of high quality.[20] Where there were free-standing stone socles for the inner face these tended to be somewhat better finished than their outer counterparts. However, the sequence of development shown by the fitting of house-wall socles[21] at Smyrna is but little reflected in the far more massive work of the fortifications, whilst the quality of the monumental Smyrna temple platforms[22] normally lay beyond their scope. Indeed, masonry style has proved a rather insecure guide to the dating of the fortification walls. There is one noteworthy exception to these limitations in quality in the stretch of adze-dressed Lesbian[23] masonry in Nx–xii,[24] whose role is uncertain although it may possibly have had some connexion with a Wall 3 gate. It has a poor relation in the rubble-Lesbian work of the Wall 2/3 inner face in the main occupation probe.[25] The projecting single-course footing at both these points is a rare reflection of contemporary house-wall construction.

The outer faces of Wall 1[26] and of Wall 2[27] were in hammer-dressed polygonal work. The Wall 3 outer face was mainly of a hammer-dressed rubble-Lesbian construction,[28] but apparently with finer horizontal courses stepped back at the crown of the socle on the east side of the city.[29] The occurrence of further such stepped masonry in the southern part of this circuit[30] immediately above ground-level may argue a much diminished total height for the whole socle in this area. A similar but more pronounced stepping, in this case in Lesbian masonry, also occurred round the Wall 3 tower at the north-east gate.[31] The form of stepped construction thus revealed by Wall 3 seems to represent a type of revetment particularly favoured by early archaic builders. One may also instance its use at Old Smyrna in Temple Platform IIA[32] and under the temple at Neandria,[33] as well as in an early peribolos wall at Eleusis,[34] In military work it is attested slightly earlier in Phrygia and it may be that the Ionians were influenced from that source[35]. Its practical function seems normally to have been no more than as a means of introducing a marked batter into a part of the face, thereby ensuring solidity and resistance to collapse—a circumstance likewise attested by its use in retaining walls. Certainly it seems to bear no functional relation to the stepped glacis construction often found round oriental fortifications, which was separate from the wall face itself and which served the role of preventing rams and other engines from being brought to bear upon the latter. Indeed, the only possible example of a Greek stepped glacis of the oriental type known to me is that afforded by the classical construction found at the edge of the siege-mound at Smyrna and which may have flanked Wall 4.[36] Rather, like the pronounced batter of the base of the walls of Troy VI, it had the effect of making the lower part of the face itself project out from the line of the superstructure above. However, it may be doubted whether this resistance to collapse is a complete explanation of those instances (at Smyrna, e.g. at E3.xix3, and at Gordion) where these 'steps' along the outside face of the wall are so broad that a man could walk along them in comparative ease. But whether these may have played some further structural role or else served some tactical purpose in connexion with sallies by the defenders it is not easy to determine;[37] nor do any such functions seem to be supported by later Greek practice. Tempting as it may be to identify this form of construction with the κρόσσαι of the *Iliad*, it must also be observed that, apart from the stepping of the Wall 2 inner face in Section λ–λ′ (pp. 41, 114) which may be quite different in function as in position, we have as yet no evidence for its employment amongst the Greeks until the middle years of the seventh century B.C.[38]

---

[19] p. 68.

[20] The outer face of the Wall 3 socle on the east side of the city tended to be better finished towards its top, the highest courses being at some points worked with the adze.

[21] Here a consistent run of technical changes enables a measure of independent stylistic dating. This material will be published in the section on the Iron Age domestic architecture.

[22] The reader is referred to the forthcoming publication of the seventh-century temples at Smyrna. These seemed to suggest that a purely angular polygonal was more current in the earlier part of the century than the developed Lesbian. On the significance of these technical terms see the next note.

[23] The terms 'rubble', 'polygonal', 'Lesbian', &c., are used as far as possible with the connotations given them by R. L. Scranton (*Greek Walls, passim*), but without the chronological implications there attached to them.

[24] p. 93, PLATE 20 *c*.

[25] p. 86, PLATE 19 *b*, *c*.

[26] pp. 40, 68, FIG. 19, PLATES 10 *a*—includes re-used material probably from it—17 *a*, *c*.

[27] pp. 40, 43, 53, 56, 64, 71, PLATE 10 *a*.

[28] pp. 48, 52, 55, 58, 65, 66 ff., 72 f., PLATES 12 *c* and *d*, 16 *a*, *c*, 15 *c background* (note that this face had been partially plundered between excavation seasons; cf. FIG. 13).

[29] p. 48 n. 60, PLATES 7, 12 *d*; p. 67, FIG. 16, PLATE 16 *a*.

[30] p. 58, FIG. 11.

[31] p. 72, PLATES 8, 16 *c*—marked '3'.

[32] *c.* 640 B.C. This structure will be amply illustrated in the publication of the seventh-century temples.

[33] Where it presumably formed part of a temple platform anterior to that whose *cella* had the internal Aeolic columns —Koldewey, *Neandria* (51st *Berliner Winckelmannsprogramm*) 26–27, fig. 52.

[34] *AJA* xxxvii. 280, fig. 11; Noack, *Eleusis* pl. 21 *e*.

The inner faces of Walls 2 and 3[39] were of well-finished, hammer-dressed Lesbianish blocks. The outer face of Wall 4 normally showed a hammer-dressed rubble-polygonal construction of varying quality.[40] However, what survived of the fourth-century wall face on the west side of the city was in adze-dressed ashlar masonry.[41]

Although some preliminary dressing doubtless was done with the andesite blocks for these faces, the fitting of the polygonal and Lesbian masonry must have been done empirically on the spot. This probably contributed some of the chippings found in a number of the foundation trenches dug for these faces (e.g. pp. 40, 48, 50, 56, 73). It would seem likely that the final dressing of the face itself, too, may often have been carried out at a late stage when the masonry had already been fitted. In some of the rare instances of adzed work this is particularly clear where the same tool-mark runs over adjacent blocks. In the better-fitted of the hammer-dressed masonry, also, an analogous phenomenon may sometimes be observed (cf. PLATE 12 *c*). It is further to be noted that re-used masonry of good finish can usually be identified by its failure to comply in this respect.

---

[35] *AJA* lx. 259–60, pls. 87; 89, fig. 32; 91, fig. 34.

[36] pp. 87, 89, 114, 135, PLATES 9, 19 *d*. Of the oriental variety, good examples in stone lie round parts of the Hittite circuit at Boğazköy; but the closest in space and time to the Smyrna structure is the stepped glacis round the Persian defences at Gordion (*AJA* lx. 253–4, pls. 83–84, figs. 11–15). However, in view of the several uncertainties remaining so far as the Smyrna structure is concerned, it would perhaps be rash at this stage to infer from it a Persian defence system there also.

[37] One possible interpretation is that these ledges may have carried vertical posts supporting projecting battlements (much like the inner face projection of the *chemin de ronde* suggested on p. 114); this lends some point to *Iliad* xii. 258 and disposes of the objection that a pronounced stepping-back of the crowning of the socle otherwise makes the base of the wall dead ground from the point of view of the defenders mounted above; against it speak later Greek practice and the absence of timber traces where they might well be expected to survive in the debris outside the outer face. Projecting battlements are known on a model from Urartu (*Iraq* xii. 5 ff., pl. 1), but there they are simply carried on horizontal beams protruding from the top of the wall.

[38] *Iliad* xii. 258, 444; H. Lorimer, *Homer and the Monuments* 433. In view of the poor preservation of the Wall 2 outer face, however, it is probably wiser at this stage not to exclude the possibility that the first appearance of this form of construction may have fallen rather earlier.

The rendering of 'battlements' is also known for this word from the lexicographers but, although the stepped triangular crenellations so widespread under the Persian Empire (p. 109) might perhaps aptly illustrate the stepped pyramidal form of construction which Herodotus (ii. 125) may have envisaged, this interpretation is more inadequate in the Homeric contexts. If the structural suggestions advanced in n. 37 above can be substantiated, a confusion between the battlements and the associated stepping of the socle face below might seem not unnatural, but here we embark on pure speculation.

[39] pp. 41 ff., 52, 57 f., 65, 66, 72 f., 86, PLATES 10 *b*, *c*, 13 *b*, 19 *b*, *c*.

[40] pp. 50, 53, 56, 64, 65, 68, 73 f., 81, 87, PLATE 16 *c foreground*.

[41] p. 93.

(*d*) *Mudbrick packs*

At many points a large part of the socle is occupied by a solid mass of laid mudbrick. In origin this seems to represent the main body of a wall of which socle and superstructure alike were in solid mudbrick apart from having the lower part of the outer face in stone, as, for example, with Wall 1 in Section λ–λ′.[42] Where built stone inner- as well as outer-face foundations were introduced with liberal stone fill backings, the part played by mudbrick in the socle became much less and, indeed, it not infrequently vanished altogether from the lower part of the wall. But very often a belt of mudbrick was still retained in the socle where it formed a kind of 'core' between the stone fills backing the two faces.[43] Presumably this area of mudbrick continued to be employed because it lent a greater resilience to the structure as a whole.[44] However, it also contributed to making the wall even more resistant to water.[45]

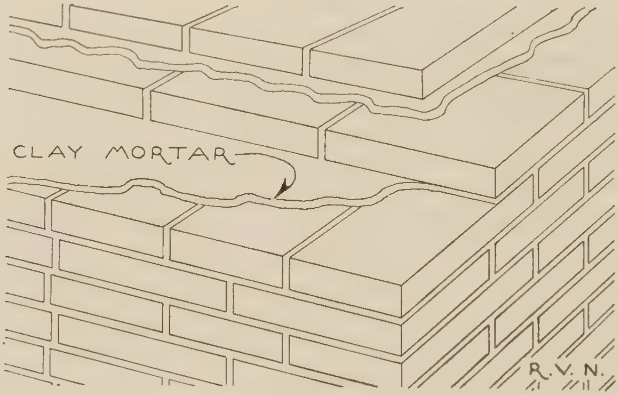


FIG. 33. BRICK PACK

The mudbricks were regularly made of clay[46] with a considerable quantity of gritty material added, chiefly sand.[47] Straw, also, was apparently an essential ingredient.[48] In these packs the mudbricks were regularly laid in alternating courses of headers and stretchers[49] and were bonded together by a liberal application of clay mortar.[50] In order to facilitate the bond, less than a whole brick had to be employed at many points at the edges of the pack. In such cases whole bricks were simply broken to the size required; there are no certain instances at Smyrna of separately-moulded half-bricks or other fractions.

---

[42] pp. 40 f.; cf. pp. 107, 117.

[43] Such a mudbrick 'core' is attested even as late as the close of the classical period, *Corinth* iii. 2, 282 ff.

[44] The way in which it has resisted collapse in Wall 2 in Section λ–λ′ is particularly noteworthy. See PLATE 7, p. 43.

[45] p. 106.

[46] Cf., however, p. 95 n. 1.

[47] Sea-shells occurred as well, e.g. in the Wall 3 brick in Section λ–λ′. Pottery and other refuse were to be found in quantities that varied considerably and presumably depended on the sources of the clay, sand, &c., employed.

[48] Occasionally its carbonized flecks were visible, but usually not. However, as all mudbricks from the site that have accidentally been baked by fire while in an intact state seem to show clear straw impressions, it was probably used throughout. The significance, however, of a very thin carbonized coating occurring on the surface of some mudbricks immediately under the mortar remains unknown.

[49] See the diagram, FIG. 33.

[50] Cf. Aristophanes, *Birds* 1143 ff.

The dimensions shown by these mudbricks are of considerable chronological value and of real metrological interest, even if their contribution in the latter sphere is at some points still a little perplexing. These dimensions have been established as reliably as the nature of the material would permit.[51] Before we pass to a detailed consideration of them, however, it may be useful to set this material against a somewhat wider background.

Vitruvius[52] states that Greek bricks were square in plan, apart, that is, from the necessary half-bricks, and measured either four or five palms (1 foot or 1¼ feet) on a side. Setting on one side for the moment the question of their precise dimensions, we find that such square bricks were normal in the Mesopotamian world[53] where they were later inherited by the Persians.[54] They are also commonly, but by no means invariably, found amongst the Hittites.[55] Bricks measuring *c.* 0·45 × 0·45 × 0·12 were found in the Little Palace at Knossos[56] and are of considerable interest for the question before us, notwithstanding that Minoan Crete apparently also used rectangular bricks.[57] Such square bricks had also been normal in Early Helladic Greece.[58] But when we turn to more specifically Hellenic material, we find that from Middle Helladic times[59] onwards early Greek bricks had tended to be of quite a different type.

In contrast with the square bricks already considered, Egyptian mudbricks were usually twice as long as they were wide,[60] and this 2 : 1 ratio in plan continued into classical times and even later.[61] The early Greek bricks to which we now turn were likewise rectangular in plan, although their length was much less in relation to their width. They conform, in fact, to a type that seems to have been the norm not only in Greece but also in western Anatolia,[62] and which was used alongside of the Mesopotamian square brick in Hittite lands.[63] It is to this type that the Geometric and Archaic bricks found at Smyrna also conform. Instances of such bricks in Middle Helladic Greece have already been touched on. To the list of Mycenaean examples given by Dörpfeld[64] others can now be added.[65] Further, similar rectangular bricks are apparently attested in Cyprus from Late Cypriot III times onwards,[66] as well as in the late Archaic perod.[67] The dimensions of Early Geometric Athenian bricks have been established at the Kerameikos[68] and detailed publication of the post-Geometric graves there will, it is to be hoped, greatly clarify the picture in Attica in archaic times. At present we have only somewhat uncertain evidence from Eleusis[69] in the sixth century B.C.

---

[51] It must, however, be stressed that unbaked bricks in their moist condition underground become quite pliant and suffer all manner of distortions to their original shape and size. For this reason isolated measurements are quite useless and only averages struck over a very great number of the more perfect examples occurring in a pack have any validity. The dimensions given here have been arrived at in this way. On their relation to the original sun-dried size of the bricks see p. 104 below.

[52] ii. 3, 3–4.

[53] e.g. at Assur (Andreae, *Assur* ii. 14) and Babylon (Koldewey–Wetzel, *Die Königsburgen von Babylon* ii. 71, s.v. *Ziegelmasse*—a useful table of dimensions, but in this instance essentially for *baked* bricks).

[54] e.g. Schmidt, *Persepolis* i. 159 (treasury), 260 (*harem* of Xerxes).

[55] R. Naumann, *Architektur Kleinasiens* 46.

[56] *P of M* ii. 519.

[57] Pernier, *Festos* i. 228, 299, 354; Durm, *Baukunst der Griechen* 37, fig. 19 (from Gournia); *P of M* iv. 69, *BSA* xxx. 59 (these last perhaps only fragments).

[58] e.g. at Lerna (*Hesperia* xxiii. 24, xxiv, pl. 23, *f*), Tiryns (*Tiryns* iii. 83) and Korakou (Blegen, *Korakou* 75). Possible rectangular variants are less well attested (Blegen, *Zygouries* 12, Goldman, *Eutresis* 31) and may in part be the product of poor preservation or the necessary manufacture of fractional bricks. But rectangular bricks had been used early in the north (Tsountas, Προϊστορικαὶ Ἀκροπόλεις Διμηνίου καὶ Σέσκλου 79, 110, 127).

[59] Goldman, *Eutresis* 61, 63 (0·3 × 0·15 × 0·08 m. A solitary square brick also occurred in a Middle Helladic pit.)

[60] *History of Technology* i. 475.

[61] Petrie, *Naukratis* i. 89 ff.

[62] e.g., cf. the bricks of Troy VI whose dimensions have been most recently listed by Naumann, op. cit. 46; sixth-century B.C. bricks at Gordion measured 0·48 × 0·28 × 0·1 m. (*Archaeology* vi. 159 ff.).

[63] Nauman, loc. cit. Rectangular bricks also occurred amongst the Etruscans (e.g. Rivoira, *Roman Architecture* 3) and the Romans (Vitruvius, loc. cit.).

[64] Schliemann, *Tiryns* (English ed.) 260: Mycenae: ? × 0·35 × 0·08–0·09 m.; Tiryns: 0·47–8 × 0·36 × 0·1, 0·52–3 × ? × 0·09, 0·43 × 0·25–0·26 × 0·09 m.

[65] Noack, *Eleusis* 70 (Mycenae: ? × 0·285 × 0·08, 0·59 × ? × 0·085 m.). The identification of the buildings involved is not very clear and the slight possibility remains that some of Noack's (and Dörpfeld's) bricks may be from post-Mycenaean structures); Blegen, *Zygouries* 37 (0·35 × 0·22 × 0·085 m.); Heurtley, *Prehistoric Macedonia* 24, 102 (*c.* 0·35 × 0·28 × 0·07–0·08 m.).

For the fifth and fourth centuries B.C. the accumulated material is much more plentiful,and here significant changes start to emerge. Brick dimensions have been established at Eleusis,[70] Demetrias,[71] Gela,[72] Olynthus,[73] and Corinth.[74] Square bricks first emerge from their long oblivion with Cimonian work at Eleusis. It seems difficult to regard these as a survival from Early Helladic times. Rather it seems more probable that at some date yet to be determined in the archaic period square bricks were reintroduced from the Orient to meet the requirements of more ambitious mudbrick building. These Eleusinian bricks are not yet the πεντάδωροι or τετράδωροι of Vitruvius, but rather perhaps those which were known as τριημιπόδιοι.[75] The first πεντάδωροι in our list seem to be those at Gela. However, it is noteworthy that, as the Greek practice of mudbrick construction spread farther afield in Europe, their brick standards seem to have spread with it.[76]

To turn now to the fortifications at Old Smyrna, we find that the mudbricks employed in Wall 1[77] measured 0·51×0·3×0·13 m.[78] and these dimensions seem to conform to a standard that had already been in vogue for a considerable time. They are attested alike by an oval Protogeometric mudbrick house[79] and a Protogeometric hearth lined with mudbrick,[80] and the less certain evidence of fallen fragments suggests that they may also have been used even in the very earliest Protogeometric levels. It is not possible to be completely certain when this standard was first introduced, but in the later of the purely Monochrome levels only a much thinner mudbrick seems to occur, 0·08 m. in thickness,[81] and even in the very latest Monochrome stratum immediately under the earliest Protogeometric floor in E.xii–xiii[82] this thinner mudbrick seemed still to be in evidence. It thus seems probable that the 0·13-metre-thick Protogeometric to Middle Geometric mudbrick made its appearance at Old Smyrna at about the same time as Protogeometric pottery or very soon afterwards—a circumstance somewhat colouring the view that this change in the brick standard may be of some ethnic significance.[83]

---

[66] *SCE* ii. 476 (at Idalion: 0·42×0·225×0·12, 0·42×0·31 ×0·12, 0·525×0·42×0·12 m.).

[67] *Liverpool Bulletin* ii. 1–2. 41 (at Paphos: 0·55×0·32 ×0·13 m.).

[68] Kübler, *Kerameikos* v. i. 10: 0·49×0·44 (0·41)×0·09 (0·1) m. Similar bricks from Athens, possibly of Geometric date, reported in *BCH* lxxxi. 507: 0·50×0·45 m. × thickness not stated.

[69] Noack, *Eleusis* 69: 0·44–5×0·24–6×0·095–0·1 m. The date of the brickwork measured by Noack seems most uncertain. Perhaps it was, as he took it to be, original to the 'Peisistratan' circuit. But most of the superstructure of this wall seems likely to have been renewed in early classical times. Perhaps the variant dimensions quoted by Philios (Ἐλευσίς 102: 0·45×0·45 ×0·08 m.) relate to this fifth-century work. Cf. also n. 70 below.

[70] *ADelt* xiv, παράρτ. 14: 0·44×0·44×0·09 m. (apparently Cimonian work).

[71] Arvanitopoulos, Θεσσαλικὰ Μνημεῖα i. 77: 0·5×0·33× 0·08–0·088 m. Noack (*Eleusis* 70 n. 2) quotes a variant thickness of 0·095 m.

[72] *AA* 1954, 644: 0·4×0·4×0·07–0·08 m. Cf. also p. 107 n. 132.

[73] *Olynthus* viii. 49, 225; xii. 225 n. 6: 0·265×0·25 ×0·084 n.; variants: *Olynthus* viii. 40, xii. 225.

[74] *Corinth* iii. 2, 282 ff.: 0·45×0·45×*c*. 0·09 m.; also half-bricks; late fourth-century work.

[75] *IG* ii^2. 1672, ll. 55–57. This interpretation, originally put forward in terms of the Corinthian bricks (n. 74 above), seems the most attractive, even though it involves the difficulty of the continued use of the short foot in Attica for some brickwork at least at a time when only the long foot seems to have been used in monumental architecture. On the metrological aspects see pp. 104 ff.. The alternative explanation of treating τριημιπόδιοι as a synonym for Λύδιοι (e.g. Noack, *Eleusis* 70 n. 2) and of applying it to such bricks as those at Demetrias (n. 71 above; interpreted in terms of the long foot of 0·327 m.) seems much less likely.

[76] e.g. *Urschweiz* xvi. 61 ff.; Bittel and Rieth, *Die Heuneburg an der oberen Donau* 22: 0·4×0·4×0·07 m., i.e. πεντάδωροι of the 0·327-metre foot like those at Gela.

[77] pp. 40, 82.

[78] The greater length of 0·57 m. (instead of 0·51) was also attested in brick possibly of this date (p. 56, FIG. 10, *d*).

[79] In Gxii. They were laid as stretchers throughout, save that the bricks themselves had to be broken to fit round the curves.

[80] In Jxix. This and the oval house just mentioned will be dealt with in detail in the publication of the domestic architecture of the city.

[81] e.g. in the debris from a possible Late Bronze Age circuit (p. 82) and in the ninth Monochrome level in Jxviii–xix. The other dimensions have not yet been established, but must have been over 0·27 by over 0·19 m.

[82] See the section, FIG. 25.

Section λ–λ′ suggested that in the Wall 2 period the same dimensions still obtained in plan, but that the bricks had become very much thinner, measuring in that area 0·51 × 0·3 × 0·075 m.[84] This seems to have been the normal size of the Wall 2 bricks in the eastern and southern parts of the circuit.[85] However, the north side of the Wall 2 enceinte presented some surprising variants. The bricks of the Wall 2 tower at the north-east gate measured 0·5 × 0·3 × 0·12,[86] those apparently of the wall line to the south of it 0·46 × 0·3 × 0·09,[87] those of the Wall 2 pack to the north-east of the temple 0·47 × 0·28 × 0·085[88] and the brickwork on the south edge of the platform behind it 0·47 × 0·28 × 0·1.[89] Out of this multitude of varying sizes it seems to be that obtaining to the east and south of the perimeter, viz. 0·51 × 0·3 × 0·075 m., that carries the day and becomes the standard of Late Geometric times. This seems already in use just before the beginning of the Protocorinthian period.[90] The numerous divergencies on the north side of the city perhaps suggest that this part of the circuit was slightly earlier and belonged to a stage when standards were still in a state of flux. The brick of the north-east gate-tower is still almost the same size as Wall 1 brick. The variants in the temple area (at FIG. 21, *l*, *m*, and *i*) may be partly due to a failure to allow adequately for clay shrinkage when determining the size of the wooden frames[91] in which the bricks were made. These bricks may well have been really intended to approximate to the sizes used in the north-east gate-tower.

The earliest parts of the seventh-century circuit, distinguished in the general description above by the name Wall 2/3, still used brick of approximately Wall 2 dimensions.[92] But in the building of the remainder of the circuit (styled Wall 3) in the late seventh century a totally different brick standard was employed, viz. 0·57 × 0·44 × 0·09 m.[93] The change seems to have been occasioned by enormous advances made in the size and quality of private building. Normally in private houses the bricks seem only to have been laid as stretchers, giving walls up to this time about 30 cm. thick. But the large two-storied houses now coming into vogue needed to be built more substantially. With the new brick standard their walls were just under 0·45 m. wide, as their socles bear witness. The new standard had already been introduced in the middle of the seventh century, to judge from the houses of that date in K.xi.[94] The change may not have been all-embracing and it is not impossible that the smaller bricks may have continued to be used occasionally. But the only definite instance of this possibly dating to the late seventh century[95] seems in its dimensions to relate itself rather to the sixth-century standard.

No mudbrick was laid in the fortifications or terrace walls subsequent to Wall 3. However, clear evidence of the standard employed in the second quarter of the sixth century B.C. is afforded by a house of that date in K.xi that was destroyed by fire.[96] Here the bricks measured 0·45 × 0·3 × 0·08 m., marking a reversion to the smaller type normal in Wall 2 and Wall 2/3, but with a difference in length perhaps adumbrated by the Wall 2 brick to the south of the north-east gate.[97] The new standard was probably dictated more by convenience than Lydian rule.[98] Not only could lighter, 0·3 metre-thick walls again be built out of these bricks (laid as stretchers), but also they were well suited (as headers) for use in the extensive renovating of the ruined houses of the later seventh century that went on at this time.

---

[83] Cf. p. 121.

[84] p. 43.

[85] pp. 53, 56. But a variant length of 0·57 m. also occurs (p. 96 n. 100). See also p. 91.

[86] p. 71.

[87] p. 72, FIG. 18, *u*.

[88] p. 77, FIG. 21, *l* and *m*.

[89] p. 77, n. 188, FIG. 21, *i*.

[90] p. 53.

[91] Πλαίσια (Aristophanes, *Frogs* 799 ff.) rather than ταρσοί (*FD* iii. v, 131 ff., no. 26, l. 13; *BCH* lxxx. 514 ff.).

[92] *c.* 0·5 × 0·3 × 0·08 m. to the north-west of the temple (p. 79) and 0·51 × 0·3 × 0·07–8 m. in the main occupation probe (p. 86). Also, if, as seemed likely, the bricks of the superstructure of the 'Wall 3' tower at the north-east gate measured *c.* 0·5 × 0·3 × 0·08 (p. 72), it becomes most attractive to assign its building to this stage as well.

[93] pp. 47, 53, 58, 79.

[94] To be published in detail in the forthcoming account of the Iron Age domestic architecture.

[95] The mudbrick wall, perhaps of a shed, in Section λ–λ′ (p. 49, PLATE 7, FIG. 2, *y*).

[96] For this also the reader is referred to the coming publication of the Iron Age domestic architecture.

On the sizes of the mudbricks used in classical times there is little information. However, the bricks from an iron furnace demolished in the fourth century B.C.[99] were 0·25 m. wide and 0·09 m. thick. Their full length could not be established and it is not known whether they were square or rectangular in plan.

Next to be considered is the relationship of these dimensions to the original sun-dried size of the bricks, for in the intervening centuries underground they have reabsorbed a considerable quantity of moisture. However, in these packs the bricks have been under great pressure from all sides which seems to have restricted their expansion to a minimum. Shrinkage on redrying suggests that where under even pressure the expansion was always less than 5 mm. in 30 cm.[100]

Further, as the builder had to plan in terms of the dried brick, not the rather larger frame from which it was made, we may expect it to be the bricks themselves, if anything, that bear some relation to the standards of length in use. Perhaps the house-wall thickness as determined by the bricks provides the key, the width of 0·3 m., or perhaps very slightly less,[101] of the Wall 1, Wall 2, Wall 2/3, and the sixth-century brick representing about a foot and the 0·44-metre width of the Wall 3 brick and the 0·45 length of that of the sixth century about 1½ feet or an ell. This becomes highly attractive in view of the fact that, allowing for the circumstance that brick dimensions must always be approximations, it gives a foot that accords quite well with the known Greek one of about 0·295 m.[102] which long continued in use in Ionia.

If we have correctly interpreted the unit of length, then of the two kinds of bricks characterized as Greek by Vitruvius we have no certain traces at Smyrna.[103] On the other hand, bricks 1½ × 1 ft. which he states to have been known as 'Lydian' to the Greeks[104] occur, by a quaint coincidence, in the second quarter of the sixth century B.C., when Smyrna was under Lydian control.[105] The one-palm thickness postulated by Holland[106] seems to be attested by the Wall 2 brick and, though somewhat less precisely, by that of Wall 2/3 and of the sixth century B.C. Also the more usual length of Wall 1 and 2 brick would approximate to 1¾ ft.

However, it is to be observed that the remaining dimensions of the Smyrna bricks can only, at best, be reduced to odd numbers of dactyls, not to even figures of feet or palms. Hence the unit of length proposed, though attractive, does not merit unqualified acceptance. Two possible explanations suggest themselves.

---

[97] p. 72, FIG. 18, *u*.

[98] Cf. below.

[99] p. 65.

[100] That the difference arising in this way was very slight is also suggested by a comparison with similar bricks accidentally baked by fire in the occupation levels.

[101] See immediately above.

[102] The figure apparently suggested by the fifth-century East Greek metrological relief in Oxford (Chandler, *Marmora Oxoniensia* no. 166; Michaelis, *Ancient Marbles in Great Britain* 559 no. 83; *JHS* iv. 335 ff., pl. 35; Langlotz, *Bildhauerschulen* 133, 136; *Hesperia Supplement* viii. 338 n. 10; A. E. Berriman, *Historical Metrology* 131 ff. Regrettably the two most recent attempts to touch on this relief from a metrological point of view seem to disregard the small but real progress made over the past two or three generations in the understanding of Greek linear standards.) I suspect that with the earlier material with which we are here dealing the unit may have been slightly longer, possibly approximating to the later Roman foot of 0·296 m. or perhaps being even longer still. But we cannot expect to arrive at a precise figure from mudbrick standards alone. Later the unit became distinctly shorter, at least to judge from the figures established with considerable precision at Priene (Wiegand and Schrader, *Priene* 86) and Didyma (*ÖJh* xxxii. 132). It is simply in the hope of avoiding confusion that the length of 0·294 m. fixed there is elsewhere employed throughout in in this account.

[103] p. 101 n. 52.

[104] ii. 3, 3. Probably quite to be distinguished from the πλίνθοι τριημιπόδιοι (cf. p. 102 n. 75).

[105] See above.

[106] *AJA* xxi. 147 ff.

These odd dimensions occur in the length and thickness of certain types of brick and one possibility is that in some periods mortar thickness was allowed for in fixing the standard. If house-walls constitute the norm, then it would be in precisely these dimensions that such allowance would be applicable, as the width of the bricks occupied the whole thickness of the wall. In practice, mortar thickness usually varied between 0·005 and 0·025 m. Thus the variant 0·57-metre length of Wall 1 and 2 brick and the normal length of Wall 3 brick might, with a very liberal application of mortar, represent a measure of 2 feet.

An alternative, but highly speculative, interpretation is that some other unit, apart from the short foot, may have been in use at the same time, just as in classical times the 0·327-metre and the 0·294-metre feet were used side by side in many parts of Greece.[107] In point of fact, if we admit a slightly larger margin of error in fixing brick dimensions and accept the simultaneous employment of both the 0·327-metre and the 0·294-metre feet, then all the Smyrna brick dimensions do become explicable.[108] Because it does not seem truly applicable to the Smyrna mudbricks, and in view of uncertainties as to its very existence,[109] the third possible unit, the long 'Samian ell' of 0·525 m., has not been invoked in this connexion.[110]

---

[107] e.g. *Olynthus* viii. 45 ff.

[108] In the table that follows *foot* indicates the unit of 0·294 m. (but cf. n. 102 above) and FOOT that of 0·327 m.:

Protogeometric houses, &c., and Wall 1:
Greco-Anatolian rectangular: 1¾ *feet* (variant 1¾ FEET) × 1 *foot* × ⅜ FOOT.
Wall 2 (except north part) and Wall 2/3:
Greco-Anatolian rectangular: 1¾ *feet* (variant 1¾ FEET) × 1 *foot* × ¼ *foot*.
Wall 3, later seventh-century houses, &c.:
Greco-Anatolian rectangular: 1¾ FEET × 1½ *feet* (= *c.* 1⅜ FEET) × ¼ FOOT.
Sixth-century houses:
Λύδιοι: 1½ *feet* × 1 *foot* × ¼ *foot*.
Fourth-century furnace:
Τριημιπόδιοι half-bricks ?: ? × ¾ FOOT × ¼ FOOT.

This table is an essentially provisional attempt to interpret the dimensions of the bricks in terms of the *two* established Greek feet. If the interpretation placed on the fourth-century bricks is justified, it will necessitate some modification of the statement above (p. 101) about the absence of fractional bricks, although the position in relation to the earlier material and all the packs in the fortifications remains unchanged. At this stage such a table cannot be regarded as definitely proving the coexistence of the 0·327-metre and the 0·294-metre feet in Ionia as early as Protogeometric times. However, such features as the early fluctuation in length between 0·57 and 0·51 m. render such a hypothesis extremely attractive. Should it become an established fact, the inference would be that the conflicting linear standards of classical Greece, oriental in their remotest origins, must first have appeared in Greek lands prior to the Iron Age amongst the conflicting cultures of the Bronze Age. Already a foot of *c.* 0·3 m. has been detected in the Early Helladic palace at Lerna (a longer version of the 0·294-metre foot?) and I am indebted to Miss E. B. Wace for the observation that measurements in the houses at Mycenae seem to be in terms of a unit of *c.* 49 cm. (the 0·49-metre ell of the 0·327-metre foot?). The brick dimensions quoted on p. 101 are also of great interest in this regard, notwithstanding that it is not always possible to evaluate the different degrees of reliability with which they have been taken. But much more than this is needed and above all else a systematic study of the major Bronze Age buildings *as architecture*. One of the lesser achievements of such work would probably be to solve the riddle now before us.

In the above account I have taken it that both length and width of the earlier rectangular bricks are fixed directly in terms of the linear standard rather than, as commonly today, through the medium of an unalterable length-width ratio dictated by the bond. For a bond requiring a *c.* 5 : 3 ratio of Wall 1 and 2 brick and a *c.* 5 : 4 ratio of Wall 3 brick argues such a monumental type of construction as we have little reason to expect outside military work; and in the superstructure of the fortifications the battered faces must have prevented the systematic use of any single bond; rather must broken fractional bricks have been of necessity employed, as they are in the preserved mudbrick 'cores'.

[109] The only measurements to which this unit has any possible application at all in the Smyrna bricks are the thicknesses of the Wall 1 and 3 brick and of that of the fourth century B.C. But since it has no relevance to the greater measurements it becomes most unlikely that it was ever used at all in this connexion. The very existence of the unit itself has been categorically denied by Dinsmoor (*Architecture of Ancient Greece* 124, 137, 257). So far as classical times are concerned, the chief source for its employment is probably Herodotus ii. 168. However, it is noteworthy that Herodotus does not designate the Egyptian unit that he equates with the Samian ell as 'royal'. Hence from this passage alone it cannot definitely be said whether the 'Samian ell' alluded to is that of 0·525 m. (equivalent to the Egyptian royal ell) or the 0·44-metre ell of the 0·294-metre foot (themselves probably ultimately of Egyptian origin and approximately equivalent to the ordinary Egyptian units). In one other passage Herodotus (i. 178) specifies the royal ell. However, here he would seem to be dealing with a Babylonian or Perso-Babylonian unit. It is 3 dactyls longer than the 'ordinary ell', presumably a Greek unit. If the 'ordinary ell' is the 0·44-metre ell of the 0·294-metre foot, this would give the 'royal ell' a value in the vicinity of the 0·49-metre ell (actually a little over) of the 0·327-metre foot, which is not unreasonable since both of these measures

Notes 109 and 110 continued overleaf

(*e*) *Drainage through the socle*

As has been observed,[111] the clay of these brick packs and the mortar with which they and the stone fills and faces were bonded together rendered these walls highly resistant to water. As an alternative, an experiment in substituting sand for clay bonding in a stone fill[112] does not seem to have been very happy. But the rain that fell inside the fortified area had to be drained out of it by some means without its undermining the walls themselves, and for this purpose built drains were probably employed, piercing the stone socle. Unfortunately our own resources did not permit the systematic clearance of entire wall faces. In such parts of the faces as were excavated in our small cuts no such drainage channels were brought to light,[113] but one was uncovered in a collapsed state in the long trench dug by the Miltners following the Wall 3 outer face.[114] Precise details of its construction, however, are lacking and these may only be inferred[115] from preserved drainage channels through later archaic fortifications elsewhere[116] and, less surely, from drains through house and courtyard walls[117] and the rare street drains at Old Smyrna itself. In all periods city gates also played a role in draining water from the fortified area. Probably Old Smyrna was no exception in this, and the fact that the built drainage channel discovered by the Miltners occurred at a point where an earlier gate seems to have been blocked up[118] may be not without significance in this regard.

2. The Superstructure

Walls 1–3[119] carried considerable superstructures[120] above the socles just considered. At one point,[121] the Wall 1 tower at the north-east gate,[122] this was constructed of white stone ashlar

---

probably originally hail from this periphery. In that case Herodotus, in using the short foot, would be speaking rather as an Ionian, although, as we have seen, no very hard and fast distinction is possible. But it would be remarkable in that case that no comparison is drawn with the longer Greek unit. If, however, he were addressing himself rather to his Athenian audience, then the 'ordinary ell' would be the 0·49-metre ell of the 0·327-metre foot and the 'royal ell' would have a value of *c.* 0·55 m. Either way, these passages do not justify the equation of the Perso-Babylonian and the Egyptian royal ells as made by Pliny (*N.H.* vi. 26) and followed by Berriman (op. cit. 29 and *passim*). The further solution of this problem is the domain of the orientalist, not the classicist. We are left with the issue of whether the Samian ell is a measure of 0·44 m. or of 0·525. In the case of the Assos standard (Clarke, Bacon, and Koldewey, *Investigations at Assos* 71 ff.), the actual linear standards were marked on metal bars, now plundered, that were set in the stone; but we may take it as certain that the units themselves were somewhat shorter than the surviving cuttings made to receive the bars. Not very much more can be said for sure, but it is certain that the longer of the fathoms shown must have been shorter than that of the 0·525-metre ell. In the case of the Oxford metrological relief, for which a Samian provenance has been suggested (n. 102 above), the left hand is a modern restoration and the total length of the fathom shown can only be guessed at. However, if any symmetry is to be allowed to the carving, the unit shown must approximate to the fathom of the 0·525-metre ell and must surely be distinctly longer than that of the 0·49-metre ell. Here let the matter rest. The Oxford relief, without recourse to the less secure evidence of inductive metrology, suggests that Dinsmoor's rejection of the long Samian ell may have been somewhat hasty, although it is possible that that unit may not have been used very extensively. See also p. 137.

[110] On the metrological issues involved see further Lehmann-Haupt, *RE* s.v. 'Stadion'. On the determination of the 0·294-metre foot see p. 104 n. 102 above; on that of the 0·327-metre foot (the actual figure quoted is Dinsmoor's) see *AM* xv. 167 ff., Paton and Stevens, *Erechtheum* 277 ff.

[111] pp. 96, 100.

[112] p. 43.

[113] Such an explanation for the curious construction at E3.xix3 (p. 66) seems hardly tenable.

[114] *ÖJh* xxvii *Beiblatt* 162.

[115] The arrangements in this regard shown in FIG. 34 are purely conjectural.

[116] e.g. Eleusis, 'Peisistratan circuit': four such drains shown on the plan, Kourouniotis, *Eleusis* pl. 1, two of them shown in greater detail by Noack (*Eleusis* 40, figs. 17–18, 71, fig. 33, pl. 24.b); Miletus, Kalabaktepe: *Milet* i. 8, 28 fig. 20; Buruncuk-Larisa: *Larisa am Hermos* i, pl. 5.b.

[117] The reader is referred to the forthcoming publication of the domestic architecture of the site. Two such sixth-century drain outlets appear on the section, PLATE 9.

[118] pp. 52 f.

[119] Wall 4 seems to have had no distinct superstructure, being apparently an all-stone construction perhaps continuing no higher than the platform of the *tell*, and the same may well have been true of the small part of the Wall 3/4 line (p. 81) actually completed.

[120] That these were of considerable height and bulk is usually clear from the extent of the debris from their collapse where this has been left relatively intact.

[121] Cf. p. 97 n. 17.

[122] pp. 68, 97.

blocks with stone and earth fill. Everywhere else in the areas excavated the superstructure appears to have consisted of solid mudbrick whose debris was usually very apparent. However, only at one point, once more at the north-east gate, on the Wall 3 tower, was this brick superstructure found preserved in its original position, and there to no very great height.[123] Consequently any attempt to interpret the appearance of the upper part of these fortifications must remain in large part hypothetical. Precise and definite answers to the questions raised can probably only be obtained at Smyrna by running sections through the great mound to the north-west of the *tell*,[124] in which the superstructure of the seventh-century B.C. circuit seems likely to be encased and probably admirably preserved. In the meantime much reliance must be placed on inference based on evidence from elsewhere, often of distinctly later date.

As has already been suggested,[125] the mudbrick superstructure of such walls may not in origin have formed a distinct element from the socle that went beneath it.[126] In time, however, the socle tended to become a separate all-stone entity[127] supporting the brick above after the fashion of the age-old tradition of house-wall construction. Its main function was probably to protect the brickwork from being undermined at its base, whether by rainwater or by enemy action. The use of a comparatively impermanent material such as unbaked brick for all the upper part of the wall was dictated not merely by considerations of economy but also by the fact that it was the most resilient of all those readily available.[128]

The faces of the mudbrick superstructure apparently continued the line and batter of those of the stone socle below, whether straight on up as suggested by the stone superstructure of the Wall 1 tower,[129] or with a slight step back from the face of the stonework below as shown by the mudbrick one of the Wall 3 tower.[130] This picture is confirmed by the well-preserved mudbrick superstructures at Eleusis[131] and Gela.[132] Apparently these faces were usually plastered.[133] Whether they were also protected against localized collapse by bands of timber, as suggested on FIG. 34, however, is far from clear. Such a practice is attested by the introduction of timber stringers into the face of the stone socle of the sixth-century B.C. 'Persian wall' at Gordion.[134] Almost certainly they must have been continued up along the face of the mudbrick superstructure above, now no longer preserved, and indeed must have played their main structural role there. That this practice at least became known on the Aegean seaboard seems attested by the employment of contrasting bands of narrow, red andesite, ashlar blocks in precisely the same way in the grey andesite socles of the archaic citadel walls of the Buruncuk-'Larisa' site.[135] But it is not clear whether this was ever much more than a mere decorative feature of the socle amongst the Greeks. At Smyrna timber revetting seems completely absent from the socles of the fortifications and, if it occurred at all, must have been confined to the brick superstructures. However, it is not in evidence in what little survives of the white stone superstructure of the Wall 1 tower[136] or of the brick superstructure of its Wall 3 successor.[137] Further, no coherent traces of heavy beams have been found amongst the brick debris from the superstructures of the Smyrna walls. And in the standing superstructures at Eleusis and Gela timber revetting of this kind does not seem to have been present. The question must as yet be left open, although it at least seems apparent that the employment of such revetting was not of invariable occurrence in early Greek walls. Also, at Gordion itself the earlier Phrygian defences[138] seem to have been in quite a different tradition. However, the epic account of the wall of the Achaeans at Troy seems to imply some form of timber revetting[139] and, inasmuch as no evidence for this has been found in Mycenaean fortifications to date,[140] it is possible that it may relate itself to an Iron Age practice still to be revealed.

---

[123] p. 72, PLATE 8.

[124] pp. 88ff., 128 ff.

[125] p. 100.

[126] Of course these generalizations only apply to mudbrick-and-stone construction. It would seem most reasonable to assume also an unbroken tradition in all-stone Greek fortifications (cf. p. 818).

[127] But with some exceptions. Cf. p. 100.

[128] Cf. Pausanias viii. 8, 8; *Olynthus* viii. 228 ff.; I am also indebted to Mr. J. K. Anderson for his observations on the resistance of solid mudbrick packs to modern artillery.

[129] pp. 68 ff., 97, FIGS. 19, 32, PLATES 8, 16 *b*, 17 *a*, *b*, 18 *d*.

[130] p. 72, PLATE 8.

[131] Kourouniotis, *Eleusis, a Guide to the Excavations and the Museum* 11, fig. 3.

[132] *AA* 1950–1, 263, fig. 56; 1954, 643 ff., figs. 95–96; *AJA* liii. 386–7, pl. 53 C–E; lix. 311–12; *JHS Archaeological Reports* 1955, 53, fig. 4; *Archaeologia Classica* ix. 44 ff., pls. 39–40; inaccessible to me in writing this have been: *Atti Acc. Agrigento* 1953–4, 18 ff.; Griffo, *Scavi delle fortificazioni greche in località Capo Soprano*; idem, *Agrigento—Guida ai monumenti ed agli scavi*.

Less appositely, one may also draw attention to the well-preserved, all-mudbrick face of the fortifications of the Lydian period round the Küçük Hüyük at Gordion (*AJA* lxi. 324, pl. 89, fig. 14).

[133] Cf. Thucydides iii. 20, 3, where unplastered patches on the face of the siege-wall at Plataea revealed the brickwork beneath. Such plaster was found preserved on the wall at Gela (*AA* 1954, 644). In the case of the Smyrna fortifications, if anything may be inferred from the preserved mudbrick house-walls on the site, a clay plaster would seem more likely than a lime one.

[134] *University of Pennsylvania Mus. Bull.* xvii. 4, 17 ff., figs. 12–14; *ILN* Jan. 3rd 1953, 20 ff., fig. 1; *AJA* lix. 1 ff., pl. 1, fig. 2. One may compare the somewhat different Hittite timber revetting, e.g. Koldewey, *Ausgrabungen in Sendschirli* ii. 107 ff.

[135] *Larisa am Hermos* i, pls. 3, 4*c*, 28, 29, 33.

At its top the solid brick superstructure was crowned by the *chemin de ronde* (or πάροδος) that carried the defenders and the battlements that protected them. The latter were probably of mudbrick throughout,[141] if anything may be inferred from later Greek practice.[142] At Gela, for example, thanks to a subsequent heightening of the superstructure, such mudbrick battlements have been found perfectly intact.[143] In their crenellations they show the characteristic Greek square form.

That this form of construction is not merely a feature of classical date but goes well back into archaic times seems to be suggested by a remarkable representation on the Corfu pediment.[144] Here the structure behind the seated figure identified as Priam was recognized by R. Hampe as a fortification, presumably the wall of Troy.[145] As Rodenwaldt pointed out, what Priam is seated on is a θᾶκος as on the François vase and this is quite separate and distinct from the construction behind. The latter, in view of the slight but distinct batter shown by both its faces, can hardly be other than a fortification wall with a low stone socle and a tall brick superstructure —a type well exemplified by the 'Peisistratan' wall at Eleusis. The whole has had to be scaled down considerably as against the size of the human figures to fit into the space available. The socle is represented as one solid mass. Twenty-three courses of mudbrick rise above it up to the level of the fighting platform of the wall. The bricks themselves have suffered a slighter reduction in size than the wall as a whole. The brick battlement stands above. Its thickness is noteworthy. Much more open to question is whether the wall merely serves to mark the locality, being balanced by the tree in the opposite group, or whether it plays some more intimate role in the scene being depicted—in other words, whether the death of Priam has been in any way conflated with that of Astyanax as foretold in Homer[146] and described in the *Little Iliad*.[147] Here let it suffice to leave such controversial issues on one side and to draw attention to another and almost unique feature in the rendering of the wall itself. It is shown in section. Other ancient representations usually portrayed fortified towns from the outside, but here the artist was faced with the more difficult task of indicating what was going on inside the city. A small detail in this regard is of interest.[148] The outer face of the wall returns to the ground behind at approximately right angles, the inner face at a much more oblique angle so as to be more widely visible and perhaps enhance the feeling that the scene is *inside* the walls. Although mudbricks are represented across the 'section' of the wall, both these faces are left smooth. They are not shown to any depth and this smoothness may be merely due to neglect. It may, however, represent an attempt to render the plastering of the two faces of the superstructure.[149]

---

[136] pp. 68, 97.

[137] p. 72.

[138] *AJA* lix. 12 ff., figs. 26–27, pls. 6–9, lx. 257 ff., pls. 87–91; *ILN* Sept. 17th 1955, 478 ff.

[139] *Iliad* xii. 28–30, 36–37 (unless the genitive denotes the object aimed at), 259–60 (unless στήλας προβλῆτας designate a *stone* outer face foundation). Many of our difficulties of interpretation arise from our ignorance as to how far we have to deal with a simple stockade such as mere mortals might raise in a day and how far, in the glory of heroic achievement, we have to visualize a far more permanent form of construction. However, a great many details in the narrative favour the latter interpretation. See further p. 99, n. 37.

[140] Timber revetting or the use of a timber frame is, of course, normal in the palatial house-architecture of the period, but it seems generally absent from contemporary military building. See also p. 137.

[141] All-stone ones would seem to be ruled out on account of their weight, which would have been excessive at the edge of a mudbrick structure. Wooden ones would also seem unlikely in view of subsequent practice and the ill accord between their flimsiness and the massiveness of the structure below. They have been claimed on the evidence of Homer, and it is conceivable (cf., however, n. 139 above) that on the Achaean wall at Troy a mixed construction is envisaged employing timber, perhaps as on the Delphi bowl (p. 110 n. 161). It is doubtful, however, whether *Iliad* xii. 444 and *Odyssey* vii. 45 entitle us to view the battlements of Troy and Scheria as no more than a mere wooden palisade (a more probable explanation is perhaps offered on p. 119); still more open to doubt would seem any attempt (e.g. *Life* Apr. 29th 1957, 34 ff.) to invoke such a palisade construction to form the battlements of all-stone Mycenaean fortifications, particularly as no cuttings or sockets in the stone to receive the vertical timbers have been reported. On the perplexing issue of Mycenaean battlements see also pp. 116 f. If the variant Iron Age construction with projecting battlements suggested on p. 99 can be verified, the probable material for them would presumably still be mudbrick, especially with supports from below to carry their weight, although conceivably they might be laced with timber against outward collapse as perhaps on the Toprakkale model (p. 99, n. 37).

[142] Cf. p. 111, n. 177 and p. 114, n. 187 on *IG* ii^2. 463.

[143] *AA* 1954, 644, figs. 95–96.

[144] Rodenwaldt, *Korkyra* ii, *Die Bildwerke des Artemistempels* figs. 68, 69, 73, pls. 25, 26; *Altdorische Bildwerke in Korfu* pls. 29, 30.

[145] *AM* lx–lxi. 274, 277.

Passing now from the form of the battlements as viewed from the side to the appearance they must have presented when seen silhouetted against the sky from below, we must now consider the shape of their most characteristic feature, the crenellations. Also, inasmuch as the earlier Smyrna walls are considerably removed in time from any Greek representations of battlements, it may not be amiss to consider the possible variant forms of crenellation first.

To judge from representations, Egyptian battlements seem normally to have had rounded tops, and the same applies to many New Kingdom scenes showing events in the Syro-Palestinian region.[150] This type reappears, in stone, at the Phoenician colony of Motya in Sicily.[151] However, I personally know of no evidence that such crenellations were ever employed by the Greeks themselves.[152]

Although square battlements also occur,[153] the normal type represented on the Assyrian reliefs is triangular in shape.[154] It seems that this constitutes a shorthand rendering of the true battlement form, also triangular but with a stepped profile; this form also appears on the reliefs (in the more elaborate renderings), as well as on glazed bricks, and is found, moreover, in Persian times translated into stone with archers' slots. This was presumably a baked brick form in origin. Not improbably it was the normal battlement type in Mesopotamia and the Neo-Hittite kingdoms. Such battlements apparently also regularly crowned the roofs of non-military buildings. Where a decorative parapet ran round the edge of the roof, battlements of this kind would seem to have been set immediately above it,[155] and in this form they probably passed into Greece as the crowning of the continuous balustrade frieze or relief sima[156] that was

[146] *Iliad* xxiv. 734.

[147] *Homeri Opera*, ed. Allen, v, *Ilias Parva* fr. xix. Cf. also *Antiquité classique* vi. 5 ff., *AJA* lviii. 293 ff.

[148] These observations are based on an examination of the casts in the Museum of Classical Archaeology in Cambridge.

[149] Cf. p. 107 n. 133.

[150] A useful recent analysis of some of these representations is afforded by Naumann, *Architektur Kleinasiens* 290 ff., and to this the reader is referred. An exhaustive bibliography, as also any consideration of the ethnic questions involved, lies beyond the scope of this study which must confine itself to observations on possible western connexions.

[151] Whitaker, *Motya* 180–1, fig. 20. Such battlements also appear on the towers in the siege scene on the Phoenician silver bowl from Amathus (n. 160 below).

[152] The authority for the restoration of such battlements on the palace at Pylos in the drawing, *ILN* Aug. 27th 1955, 346–7, Apr. 7th 1956, 256, fig. 1, is unknown to me. Earlier restorations of such battlements on Mycenaean fortifications are without foundation.

[153] e.g. on some of the buildings on the Musasir relief slab showing the looting of a temple or similar building.

[154] Naumann, loc. cit. Cf. n. 150 above.

[155] Cf. R. Demangel, *La Frise ionique* 60 ff.

[156] e.g. Koldewey, *Neandria* (51st *Berl. Winckelmannsprog.*)

apparently the ancestor of the Ionic frieze. However, in the process they became drastically reduced in size and were rendered as a mere dog-tooth pattern.[157] There is nothing in the Greek handling of them to suggest that they were ever recognized as having originated in battlements or were ever considered as anything more than a mere decorative motif[158]—a circumstance that renders it most unlikely that such crenellations had actually been employed on Greek fortifications in the immediately preceding period.

It remains to touch on two other groups of representations. The cities shown in the mixed oriental style of the Phoenician bowls seem to have square crenellations in the case of those from Praeneste[159] and Amathus,[160] though in the latter case with rounded Egyptian ones instead on the towers, and none at all, but simply a plain parapet, in the instance of the Delphi one.[161]

The Lycian representations of fortified cities from Xanthus,[162] Gölbaşı-Trysa,[163] Tlos,[164] and Pinara[165] form so coherent a group that it seems clear that a local Lycian fortification type is being depicted. The leaf-shaped battlements probably have an oriental origin. It seems important, however, to observe that all these representations belong to a period when square crenellations or perhaps even 'window battlements'[166] were established as universal amongst the Greeks. On present evidence it will probably be safest to consider the Lycian type as a purely local development and one of which there is no evidence as yet to show that it had any effect on Greek practice.

To summarize, then, although all certainty is beyond our grasp, it seems improbable that Greek crenellations of Geometric and early archaic times were either of the rounded Egyptian or triangular Assyrian type. A hybrid type occurs much later in Lycia. Although we may allow its probable oriental parentage, its influence seems purely local and its very inception may not improbably date later than the period with which we are concerned. Greek representations of fortifications from the sixth century B.C. onward invariably show the square form of crenellation. Throughout this seems to be broader and more massive and regular than the occasional oriental square battlements. Indeed, it would seem likely that already in the sixth century B.C. there lay behind it a long independent tradition of development that constituted one of the distinctively Greek and European contributions to the art of fortification. When, on the other hand, crenellations first came to be employed on Greek walls, whether in later Mycenaean times or in the early Iron Age, remains for the present unknown. But the silver rhyton from Schliemann's fourth Shaft Grave at Mycenae appears to depict plain parapet battlements devoid of crenellations.[167]

48, fig. 68; *Mon. Piot* xxxviii. 55 ff. fig. 1, pl. v; *Studia antiqua A. Salač oblata* pl. viii. 1; *Larisa am Hermos* ii, pls. 2, 5, 6, 8–12, 15–17, 36, 40, 47; Åkerström, *Architektonische Terrakottaplatten in Stockholm*, pls. 1, 2, colour pl. 2.

[157] Perhaps not uninfluenced by the apparent 'shorthand version' of the Assyrian monuments mentioned above.

[158] Most striking is the way they are continued around the antefixes, e.g. Koldewey, *Neandria* 46, fig. 66; 48, fig. 67; *BCH* xlv. 141, fig. 24; M. Launey, *Études thasiennes* i. fig. 17, pl. x. The dog's-teeth on disc-acroteria are probably in some way related, although the precise form of this relation is much more obscure.

[159] *MemAmAc* iii, pls. 20–21.

[160] *JHS* liii. 25 ff., pls. i–iii, *OpArch* iv. 10, pl. 6; for the crenellations on the towers see *JHS* liii, pl. iii.

[161] Perdrizet, *FD* v, pls. xviii–xx.

[162] Fellows, *Ionic Trophy Monument at Xanthos* pl. 3; Smith, *BMC Sculpture* ii. 19, slabs 869, 870, 871*b*, 876*b*, 877, 878; *Mon. Inst.* x, pls. 15–16; Brunn, *Denkmäler* 216; Winter, *Kunstgeschichte in Bildern* 264 ff.; *AM* lii *Beil.* xiii. 5–6, xiv. 1–2; Picard, *Manuel d'Archéologie grecque, la Sculpture* ii. 869, fig. 352; Eichler, *Heröon* fig. 9.

[163] Benndorf, *Heröon von Gjölbaschi-Trysa* pls. xii–xiii; Eichler, *Die Reliefs des Heröon von Gjölbaschi-Trysa* 22 ff., pls. 18–21.

[164] Benndorf-Niemann, *Reisen* i. 144, fig. 86*d*; *AM* lii. 143, fig. 6; note, however, that, although the similarity in the type of the representation is clear, the battlements cannot be adequately distinguished on the published drawing.

[165] Benndorf-Niemann, *Reisen* i, figs. 36–37; *AM* lii. 141, fig. 5; Eichler, *Heröon* fig. 10.

[166] Cf. p. 111 n. 177.

[167] See below, p. 116. It is possible, further, that *Iliad* xii. 262–4 may imply the presence of crenellations on the Achaean wall and conceivable that the popularity of the plain key-pattern (i.e. devoid of meander elements) in Geometric art may reflect an interest in square crenellations (cf. the Munich hydria, n. 171 below). But such arguments

Square Greek battlements make their unmistakable appearance above the gate building in the Troilus scene on the François vase.[168] The shallower coursing shown by the crenellations themselves as opposed to the stone ashlar work below might suggest that these, apart from their copings, were of mudbrick, although such a change in material at so high a level would seem remarkable. However, the architecture is in other respects also somewhat unorthodox.[169] The round black blobs on the battlements have been interpreted as an accumulation of sling bolts or similar missiles. On the red-figured cylix in Boston[170] the crenellations spread somewhat at their base, but the shape is essentially the same. On a black-figured hydria in Munich,[171] however, although the angularity is preserved, the profile of the battlements has been simplified down to a kind of key-pattern. Less careful renderings of these subjects, such as, for example, the beleaguered city gate on the Florence and Berlin fragments,[172] have hardly anything to tell us.

Where the battlements were of mudbrick, an impervious projecting coping in some other material probably became highly desirable to protect them from being furrowed by the rains. Such copings are actually shown on top of the crenellations on the François vase and the Boston cylix. Roof tiles appear to have been used not uncommonly for this purpose,[173] and it may be such tile-covered, pitched crenellations that are shown on a Corinthian oinochoe in the Bibliothèque Nationale in Paris.[174] It was probably this practice that gave rise to the projecting pitched copings of stone that continued to be set even on the all-stone battlements of all-stone classical walls such as those at Phyle[175] and Messene.[176] Such copings also continued when the crenellations had become closed above so that the battlements presented a plain face pierced by square windows.[177] Indeed they have persisted on decorative crenellations until quite recent times. However, terracotta roof tiles could not have been employed as copings on the three early Smyrna circuits under consideration. On this point the excavational evidence leaves no doubt. Roof tiles were apparently a Peloponnesian invention that had not yet been adopted by Smyrna when she was destroyed by Alyattes. Indeed, if the Smyrna battlements had pitched tops they can only have been covered by impermanent materials such as mud-plastered reeds, as suggested in FIG. 34.

However, both the François vase and the Boston cylix unmistakably indicate flat copings. The obvious material in such a case would be thin, light slabs of stone and, in point of fact, thin white stone slabs seem actually to have been used to form just such copings at Smyrna.[178] But none

---

involve too much speculation to be fully admitted as archaeological evidence.

[168] *FR* pls. 11–12; *ABV* 76. 1.

[169] e.g. in the jointing of the heavy masonry over the light and presumably wooden lintel.

[170] Caskey and Beazley, *Attic Vase Paintings in Boston* 31, pl. xiv and further bibliography there given.

[171] *Mon. Inst.* i, pl. 34; Benndorf, *Heröon* 153, fig. 141; *Greece and Rome* i, pl. 9; *Antiquité classique* vi, pl. 4; *AJA* lviii, pl. 59, figs. 19 *a–b*; *ABV* 362. 27.

[172] Inghirami, *Vasi Fittili* iv, pl. ccciv; Thiersch, *Tyrrhenische Amphoren* 64; *ABV* 95. 8.

[173] Cf. Thucydides iii. 22, 4.

[174] Milliet-Giraudon, *Recueil* i, pl. 18; Babelon, *Cabinet des Antiques* 129, pl. xi; Benndorf, *Heröon* 152, fig. 140; De Ridder, *Cat.* no. 179; *CVA Bibliothèque Nationale* i, pls. 11. 9–11, 12. However, it is nevertheless far from clear why people's heads are shown *in front of* the crenellations, if such they be.

[175] Wrede in *AM* xlix. 173 ff. and fig. 6. The crenellations had angled returns for better protection.

[176] Wrede, op. cit. 176 fig. 7; Blouet, *Expédition de la Morée* i, pl. 39, fig. iv, pl. 41, fig. iii.

[177] e.g. at Herakleia on the Latmian Gulf (Krischen in *Milet* iii. ii *passim*) and as has been claimed (Krischen, op. cit. 51; Wrede, op. cit. 178) for Cnidus, Iasos, Acarnanian Chalcis, Samos, and Aegosthena, not to mention Miletus itself (A. von Gerkan, *Milet* ii. iii as restored on figs. 10, 11, 31, 44–45). In mudbrick, as opposed to stone, and with a tile covering it was employed on the late fourth-century B.C. walls of Athens (*IG* ii^2. 463; see n. 187 below). However, the date of the first introduction of this type of battlement, whether still well back in classical times or not until the beginning of the Hellenistic period, seems to me much more uncertain. The Aegosthena circuit, for example, is tentatively dated by Scranton (*Greek Walls* 81, 176) in the early fourth century B.C.

[178] Cf. p. 64 above. The reader is also referred, for example, to material from the temple pylon to be published in the full account of the seventh-century temples. Further examples from other parts of the site will probably be included in the publication of the domestic architecture.

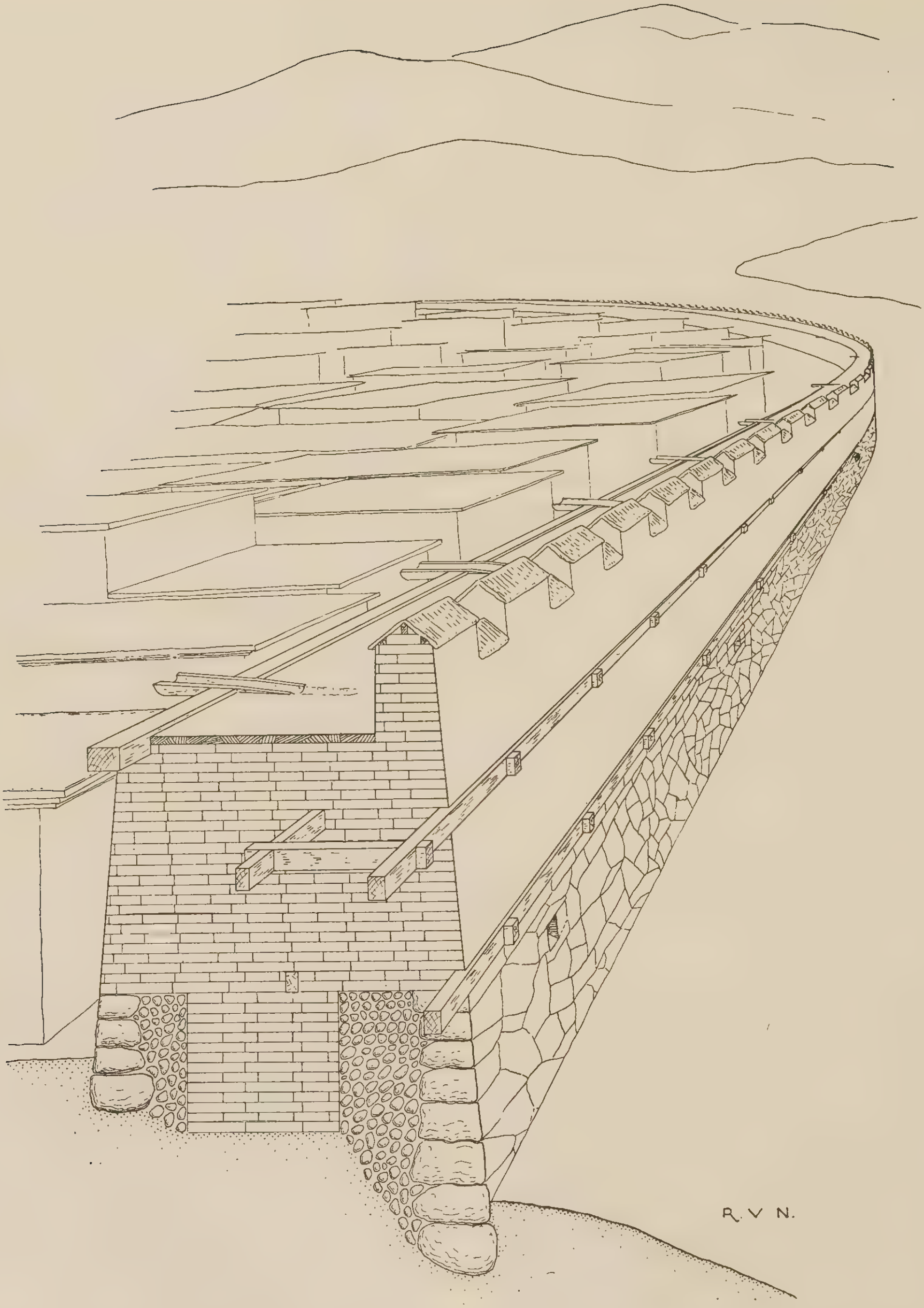


FIG. 34. A POSSIBLE INTERPRETATION OF THE SUPERSTRUCTURE INVOLVING TIMBER REVETTING AND A SUGGESTION FOR THE PROTECTION OF THE *chemin de ronde* AND BATTLEMENTS AGAINST THE WEATHER

whatsoever have been found in conjunction with the outer faces[179] of any of the fortifications of the city.[180] If flat copings were in fact used, I can only suggest that they consisted of a light wooden frame carrying a waterproof covering of clay and loam after the apparent form of contemporary flat house-roofs.[181] Such an interpretation is put forward in FIG. 35.

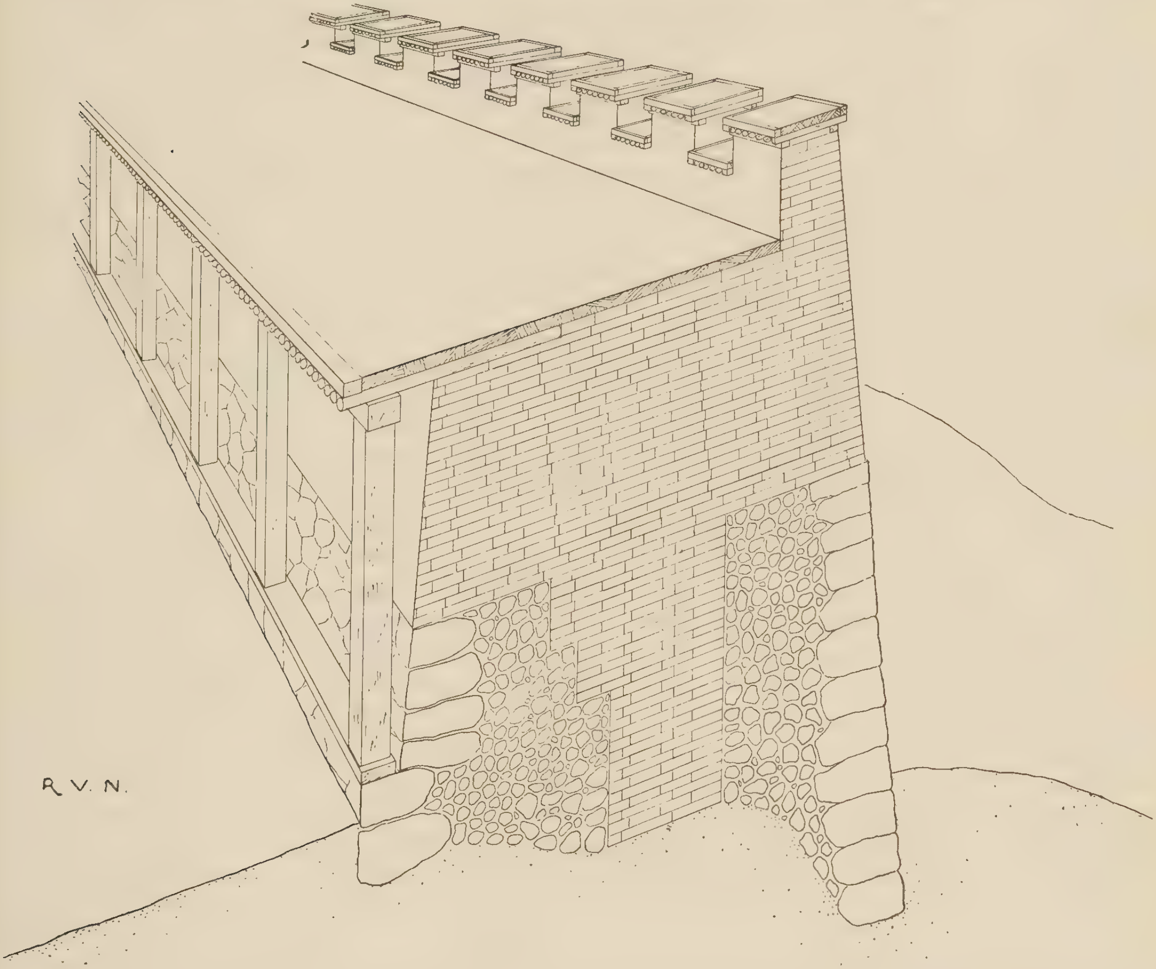


FIG. 35. AN ALTERNATIVE POSSIBILITY FOR THE COVERING OF THE *chemin de ronde* AND BATTLEMENTS

It was probably no less important to protect the *chemin de ronde* or πάροδος against the weather and to drain off from it the considerable volume of rain-water that fell on it without having it furrow the battered mudbrick faces of the wall below.[182] The first of these objects was probably achieved by treating the 'walk' like a flat house-roof.[183] The second may have been attained by the employment of projecting drainage spouts as suggested in FIG. 34. If so, however, they were presumably of wood. No fragments whatsoever of stone or terracotta spouts have come to light in the excavations.

---

[179] Those found outside the fountain-house must surely belong to that building and not to the fortifications behind.

[180] Such copings, presumably of stone, seem to be restored in the reconstructions, *Larisa am Hermos* i, pls. 28–29. The excavational evidence for them at Buruncuk is not recorded.

[181] To anticipate briefly the publication of the domestic and temple architecture, it has been inferred that two types of roofing were current in pre-classical Smyrna: a pitched, thatched one and a flat planked one covered with loam. These are not matters capable of absolute proof on present evidence, but the inferences are strong ones.

[182] It would seem that such details were not of interest to the artist who carved the fortification wall on the Corfu pediment.

A further curious circumstance should perhaps also be considered in this connexion. A 'step' projected from the inner face of the stone socles of Walls 2 and 3 on the east side of the city[184] and from that of Wall 3 to the south.[185] In the first instance the 'step' bonded into the face and was 0·3 m. wide; in the second it was built against it and had a width of 0·6 metres; in both cases, however, it stood well above ground.[186] A possible interpretation of the function of these 'steps' is that they may have carried a wooden frame supporting an extension of the *chemin de ronde* beyond the inner edge of the superstructure, enabling the top of the wall to drain like the projecting eaves of a flat house-roof. FIG. 35 suggests the possible appearance it may have presented. If such a construction can be verified by other findings elsewhere, it will offer an interesting analogy for a known later procedure, most recently discussed by Holland with reference to *IG* ii^{2}. 463.[187] At Smyrna, however, such 'steps' have not been discovered elsewhere in the Wall 2 and Wall 3 circuits and they are quite absent from the excavated parts of Wall 1, so that, if they are correctly interpreted above, this may still have been a device only used occasionally. But where the free-standing superstructure of the inner face was lower less projection would be needed, and perhaps a similar arrangement could have been employed, simply supported on wooden brackets bonding into the upper face of the superstructure.

3. The Development of Early Greek Fortifications

It now remains to try to place the fortifications of Old Smyrna in something approximating to their true relation to other Greek constructions of similar kind. In doing so I propose to leave the classical defences of the city on one side and turn simply to Walls 1–3. Wall 4, from whatever cause, is remarkable for the poverty of its construction and its use of long-outmoded concepts—e.g. in masonry, in the lack of salients, in the absence of a system of towers, and in the inadequate protection of the gate. Its one unique feature is the employment of an oriental-type glacis to the north-west of the city,[188] although the changed construction at this point, possibly explicable as a survival from a somewhat earlier building period, seems most probably to be ascribed to the need to revet the shifting debris of Alyattes' siege-mound rather than to any more purely military object. Similar strictures apply, though to a lesser extent, to the forts on the hillside above the city, apparently also of classical date.[189] All these have little to tell us of the finer developments of contemporary military architecture and are mute testimony to the reduced importance, whatever its political organization, of the classical city. A really efficient and up-to-date defence system was not by any means a luxury in which every city could afford to indulge. Wall 4 at Smyrna, with all its shortcomings, will still bear comparison with, for example, the fourth-century defences of Olynthus.[190]

---

[183] Cf. *AJA* liv. 353.

[184] p. 41, PLATES 7, 10 *c*.

[185] p. 65 (at grid O7.xxii5).

[186] In both areas there may have been a gate in the vicinity. Alternative explanations to that advanced seem, however, less tenable. The breadth of the projection is, for example, too slight for it to have served as the foundation for wooden staircases giving access to the *chemin de ronde*. An analogous construction occurring on the Wall 3 outer face (e.g. at E3.xix3) has already been discussed above (pp. 98 f.).

[187] *AJA* liv. 337 ff., where reference to previous studies will be found. Holland's interpretation of this ἴκρια-construction is, from an architectural point of view, by far the most attractive yet advanced; however, it does involve a very awkward transition in the text of the inscription at ll. 69–70, unless the original phrasing of the document be convicted of confused wording.

[188] pp. 87, 97, FIG. 24 *u*, PLATES 9, 19 *d*.

[189] p. 5 and pp. 134 f.

[190] *Olynthus* viii. 39 ff.

Walls 1–3 at Smyrna, however, belong to a totally different era in the city's importance. Concentrating our attention upon them, spanning as they do the period from the mid-ninth to the late seventh centuries B.C., we find that we have to deal with a series of fortifications on a scale hitherto unknown in this period in the Greek world. Indeed, very few defence systems that can securely be considered contemporary with them have yet been identified in Greek lands, although this circumstance seems more likely to be due to the absence of exploration and excavation than of surviving remains. One may instance the traces of a Geometric enceinte at Eleusis,[191] a wall at Miletus considered, however, to be rather a terrace wall,[192] a seventh-century circuit wall at Corinth,[193] the city wall at Vroulia in Rhodes,[194] and, on a less extensive scale, the citadel walls of Halae in Boeotia[195] and at Emborio in Chios[196] and, at the very entrance to the territory of Smyrna herself, the first circuit of the fortress at Bel Kahve.[197]

This is of necessity a very short list.[198] It can be lengthened considerably by the application of the less certain criteria of masonry style and historical probability to the visible stone faces of many existing circuits. Thus a number of the Lesbian walls listed by Scranton[199] may date back into the seventh century and, in some cases at least where they have rubble predecessors, these may be even earlier.[200] However, the one defence system actually assigned by him to the eighth or seventh century B.C., the Parnes-Aigaleos wall in Attica,[201] appears to date from a much later period, probably in the third quarter of the fourth century B.C.[202]

As yet the development of Greek fortifications at the beginning of the Iron Age continues to remain obscure. Previously, however, in later Mycenaean times great care had been lavished on the defences of the citadels[203] of the principal towns, such as Mycenae,[204] Tiryns,[205] Midea,[206] Athens,[207] Gla,[208] Phylakopi,[209] &c. The wall faces were normally of a very massive hammer-dressed rubble masonry, commonly called 'Cyclopean', with tendencies to coursing and even to breaking almost into an ashlar construction at angles, gates, and towers. The interior of the wall was usually occupied by stone fill. The two most noteworthy features are probably the formidable size of the face blocks and the great height to which some at least of the faces must originally have stood in stone. Apparently there is little to suggest that any distinct superstructure of brick or stone went above them after the fashion of the Trojan walls[210] or those of Old Smyrna or the Orient in general. However, to judge from the silver rhyton from Schliemann's fourth Shaft Grave at Mycenae,[211] it seems likely that their immediate predecessors at least[212] had their fighting platforms protected by a parapet crowned with a coping but lacking crenellations.[213] Towers or, to be somewhat more precise in one's terminology, rectangular projections from the wall face are not a regular feature. Normally they are only employed to protect gates, those situated at other points on the circuit[214] for strategic reasons being extremely rare. The centring of the whole task of defence on tall projecting towers spaced at regular intervals after the oriental fashion seems unknown in the main Mycenaean fortifications.[215] In the defences of Troy VI,[216] however, such a system of towers was progressively developed, but it is noteworthy that even here the layout and execution of the fortifications have much more in common with Aegean work[217] than with the elaborate defence systems, for example, of the Hittites.

---

[191] Wrede, *Attsiche Mauern* fig. 2; marked on plan: *Archiv für Religionswissenschaft* xxxii. 54, *ADelt* xiv. παράρτ., Kourouniotis, *Eleusis*.

[192] A. von Gerkan, *Milet* i. 8, pl. xvi. 2. At Smyrna such masonry would be more likely in the seventh century B.C. than in the eighth, but such criteria are not yet ones in which one can place too much confidence (cf. p. 98).

[193] *Corinth* xv. i. 14–15, pls. 2D, 3A, 4A (*top right*), 51, xv. ii, pl. 60. Poorly preserved, it has a width of *c.* 2·4 m. The socle apparently consisted of stone faces with a 'core' of earth fill subdivided by boulder partitions (cf. p. 95 n. 6); the superstructure is presumed to have been of mudbrick. The main body of the wall may be as early as the first half of the seventh century B.C., but a trench cut to receive an excessively deeply founded part of its inner face was dated to the third quarter of that century.

[194] Kinch, *Vroulia* 90 ff., pls. 2, 19*a* and plan. Stone socle and mudbrick superstructure. The relative lightness of the wall commands comparison with the classical circuit at Olynthus (n. 190 above). Note the quarry-fosse outside the wall. If, as seems likely, the 'tower' is later than the circuit wall, then a seventh-century or earlier date for the latter seems assured. Was the original form of the gate not perhaps a simple 'overlap' type of construction?

[195] i.e. the earliest construction phase, IA, which I take only to be certainly evidenced to the north-east. It is dated by its excavator around 600 B.C. (*Hesperia* ix. 390 ff., 430). Is not the second stage at this gate (IB), with which I would suggest taking the earliest extant circuit wall with the round towers, perhaps rather later than stated?

[196] *JHS Archaeological Reports* 1954, 20; *ILN* Jan. 30th 1954, 159 ff.; Apr. 23rd 1955, 740 ff.; Dec. 31st 1955, 1144 ff. Apparently not later than the early seventh century and possibly distinctly earlier.

[197] p. 4 and references there given; cf. p. 125; PLATE 5 *a*.

[198] e.g. the 'Cyclopean' circuit at Asine (Persson and others, *Asine* 33) has been omitted because of the implied late date for part of it (Scranton, *Greek Walls* 53 ff., 67 ff.).

[199] Scranton, op. cit. 25 ff., 137, 159 ff.

[200] Scranton, op. cit. 145 ff., 184 ff.

[201] Scranton, op. cit. 39 ff., 155, 186; *Hesperia* xi. 193 ff.; Wrede, *Attische Mauern* figs. 28–29.

[202] See Jones, Sackett, and Eliot, *BSA* lii (1957), 152 ff.

[203] Strategic considerations may have dictated the inclusion of a more considerable area in the case of Gla, the defences following the edge of the 'island'. Whether the first Milesian circuit (*Milet* i. 8. 73 ff.; *Istanbuler Mitteilungen* vii. 106 ff., 114 ff.) may be regarded as a true city wall is not yet clear. Similar doubts obtain at Phylakopi.

[204] Wace, *Mycenae* 49 ff.; Matz in *Hdb. d. Klass. Alt.* vi. 2. 285.

[205] Müller and Sulze, *Tiryns* iii. 1 ff.

[206] Persson, *New Tombs at Dendra* 3 ff.

[207] Kavvadias and Kawerau, ἡ Ἀνασκαφὴ τῆς Ἀκροπόλεως *passim*; Judeich, *Topographie von Athen*^{2} 113 ff., pl. 3*a*; Wrede, op. cit. fig. 1; Hill, *Ancient Athens* 8 ff.; *Hesperia* xv. 73 ff.

[208] *BCH* xviii. 271 ff.; *AM* xix. 405 ff.

[209] *JHS Supplement* iv, pl. ii.

The most characteristic form adopted by the gates is that in which the wall-line is, so to speak, broken in such a way that the two ends overlap for a space, the gap between them forming the approach to the gate which the outer 'stub' flanks and protects and which is most usually sealed by the gate itself at the end of the inner one. There are, of course, endless variations on this basic theme, but it seems, in essence, to be a distinctively Greek gate type, although sometimes obscured by subsequent embellishment of the important overlapping outer wall-end.[218] However, gates of the more widespread pylon type also occur, including the variants with a kind of enclosed court behind.[219]

In default of any extensive use of protecting towers, one of the devices that seem to have been employed to secure flanking fire may constitute an early form of the later Greek 'indented trace'.[220] This has been detected in the circuit at Tiryns, but even there part of the broken outline seems to be the product of successive building stages,[221] whilst much more arises from the employment of a different device to be detailed below. Indeed, in this form, it is of extremely rare occurrence in the great Mycenaean defence works. However, a strong superficial resemblance exists between this and the slight indenting of the wall face at perfectly regular intervals met with in the defences of Troy VI and in Greece at Gla[222] and not uncommonly elsewhere.[223] This latter, however, is so slight as to be without flanking value and seems to be purely structural in function.[244] A conceivable interpretation is that it may have carried a protective return of the battlement parapet resembling that found much later on classical walls at Phyle[225] and Acarnanian Chalkis,[226] and perhaps at Messene.[227]

---

[210] Cf. n. 216 below and p. 97 n. 17.

[211] Karo, *Die Schachtgräber von Mykenai* 106–8, 173 ff., pl. cxxii. I take it that the architecture is Aegean in conception. This is by no means universally conceded. Cf. Persson, *New Tombs at Dendra* 182 ff.

[212] Uncertainty exists as to the significance and even the relevance of the further material such as Bulle, *Orchomenos* pl. xviii. 2–6, Rodenwaldt, *Der Fries des Megarons von Mykenai* 37, fig. 19.

[213] However, curious V-shaped openings appear on the fragment, *AM* xl, pl. viii*a*, although these may conceivably represent part of a decorative crowning set, not on the fortification wall, but at the top of a non-military building behind it. On the coping see further n. 233 below.

[214] e.g. Wace, *Mycenae* 97.

[215] Though apparently attested in possibly earlier work in the Cyclades, *AE* 1899, 115 ff.

[216] Dörpfeld, *Troja und Ilion* 107 ff.; Blegen, Caskey, and Rawson, *Troy* iii. 81 ff.

[217] As further evidence for this west Asia Minor tradition one may perhaps instance the Prehellenic wall at Buruncuk-Larisa, *Larisa am Hermos* i. 15, fig. 3, 44, pls. 2*a*, 4, 32, 33. The Bronze Age fortifications of Smyrna itself have yet to be explored.

[218] As at Phylakopi and Tiryns.

[219] e.g. at Gla.

[220] Scranton, op. cit. 149 ff.

[221] Cf. *Tiryns* iii, pl. 4.

[222] *AM* xix. 425 ff., Fimmen, *Kret.-Myk. Kultur* fig. 26.

[223] e.g. at Tiryns and Phylakopi. Cf. also *AE* 1899, 115 ff.

[224] Cf. Scranton, op. cit. 151 ff.

Other features of Mycenaean defences may be briefly touched on here. Although corbelled arches and vaults seem freely used for posterns as well as for passages and chambers, yet, to judge from the Lion Gate at Mycenae, main gates seem to have had flat lintels, although the pressure on these was reduced by the employment of corbelled relieving arches. This is of interest inasmuch as the characteristic square two-leaf type of gate was long to continue the norm amongst the Greeks. In any case it seems important to observe that the developed Mesopotamian form of main gate spanned by a true arch nowhere occurs. The natural slope of the ground was freely turned to advantage in the siting of the walls, but was not developed artificially by built glacis-constructions, &c. Indeed, outworks beyond the walls seem to be absent.[228] The keynote of these defences seems to be a concentration on sheer height, thickness, and weight, perhaps with a view to the moral effect of these factors on any potential attacker, rather than any detailed tactical positioning of fire-power or angle of fire.

The development of Greek military engineering over the succeeding Protogeometric period is as yet unknown, and light first dawns again with Wall 1 at Old Smyrna. The gap is a considerable one, yet when we examine this Smyrna circuit and its two successors, Walls 2 and 3, we are struck by certain remarkable correspondences between them and their Mycenaean forebears. The trace is a perfectly plain one.[229] Towers occur only at gates and are solid. The gates themselves appear regularly to have been of 'overlap type'.[230] Throughout strength lies in sheer massiveness of construction. Oriental refinements and elaborations are lacking and the tradition seems purely Greek.

There are also differences that have developed that are no less remarkable. One of these is social. The Mycenaean circuits were *par excellence* citadel defences enclosing a palace and its surrounds. The walls of Old Smyrna down to *c.* 700 B.C.[231] defended an entire city, albeit a small one. The stages by which this change had come about are not yet clear.[232]

Even more striking is the change in material and the dominant role assumed by mudbrick in the construction. It is of course possible that slight superstructures or at least parapets or battlements of mudbrick may have been employed above mainland Mycenaean fortifications of stone, although such a usage does not seem to be soundly attested and a change in material at so high a level would seem distinctly impractical.[233] Further, to judge from the evidence of Wall 1 at Old Smyrna, the mudbrick superstructure seems to be a secondary development from a wall entirely of mudbrick or almost entirely so. It is noteworthy that such an initial form, without adequate stone protection for the mudbrick base of the wall, is ill suited for the Aegean climate.

---

[225] *AM* xlix. 173 ff., fig. 6; p. 111 above.

[226] *AA* 1916, 238, fig. 17; here apparently used with 'window battlements', for which see p. 111 n. 177.

[227] Blouet, *Expédition de la Morée* i, pl. 39, fig. iv; *AM* xlix. 173.

[228] Cf. p. 118.

[229] The indented trace is not represented at Smyrna until classical times and then only at the upper classical fort where it may occur once or possibly twice. See p. 134 and FIG. 36 (south side) and *ÖJh* xxvii *Beiblatt* 131, fig. 64 (west side).

[230] More intimate details of their construction can probably only adequately be obtained by area excavation on a scale beyond the resources of the recent Anglo-Turkish investigations.

[231] Cf. pp. 15, 125.

[232] Cf. Wycherly, *How the Greeks Built Cities* 40. See also p. 115 n. 203 above. Late Cypriot fortifications (e.g. see below) suggest the possibility that the Greeks may have taken cognizance of such changes quite early.

[233] This is not to be taken to mean impossible. Mudbrick was used for the upper stories of houses and palaces above the high timber-laced stonework. However, the surviving fortifications seem often to attain a full and sufficient height without there being any call to invoke an addition of brick. However, strange though the resultant construction might seem, it is possible that we may have to concede the employment of brick to form the battlement parapet of these walls. Indeed it is not altogether easy otherwise to account for the coping set above it on the Mycenae rhyton. It is noteworthy that brick battlements on a stone wall are perhaps also suggested much later by the François vase (p. 111). However, such a construction is completely different from that under consideration. See also p. 137.

In default of the discovery to date[234] of such Mycenaean mudbrick walls in Greece proper, we must turn to the nearest concentration of early Greek work of this type which seems to be afforded, but by no means invariably, by Late Cypriot defences in Cyprus. Here the Kouklia site at Paphos,[235] Idalion,[236] and Enkomi[237] appear to offer, to judge from the reports, respectively an all-brick wall, a wall with mudbrick behind the stone face of the socle as well as in the superstructure, and a stone wall part of whose superstructure seems to have been in brick.

The stages by which this type of construction established itself in mainland Greece and Ionia and how widespread it was at first are quite unknown. However, quite apart from such 'Cyclopean' defences as continued in use, it would seem unlikely that the tradition of building all-stone fortifications was ever interrupted or that the archaic and classical manifestations of this form of construction did not ultimately stem from this.[238] Probably availability of material was a major determining factor, mudbrick walls being more natural on alluvial plains and all-stone ones on mountain heights.[239] But, however that may be, the stonework of the socles of the early mudbrick walls probably drew on their 'Cyclopean' predecessors, if not also contemporaries. Although the combination of stone socle and mudbrick superstructure represents a common oriental form of military construction, yet the gradual emergence of the through-going stone socle from a stone outer-face foundation, to which the early Smyrna walls seem to bear witness, may be an independent local development. This seems to be borne out by the purely Hellenic appearance of the traces themselves, a remark that seems as true of Wall 3 at the close of the seventh century as of Wall 1 in the ninth century B.C.

The use of the new mudbrick construction seems to have brought the development of outworks in its train. The quarrying of the brick produced a great ditch some distance out from the face of the wall and into this was driven a serried array of pointed stakes.[240] This checked sudden cavalry or chariot forays against the wall itself; it also probably held up any major assault on the wall behind, exposing the attackers for a considerable period while they forced a passage as 'sitting targets' to the defenders on the wall. Such fosses have actually been cleared at Kouklia in Cyprus[241] and at Vroulia in Rhodes.[242] They are conspicuously absent from all the circuits round the east and south sides of Old Smyrna. However, there the close proximity of the sea or the river must surely have been defence enough on all sides save the north and north-west where, regrettably, the intrusion of the siege-mound and the modern Bayraklı-Bornova road, combined with the high water-table, has effectively precluded any systematic exploration for outworks. Seen in this light, the wall of the Achaeans at Troy as described by Homer[243] would seem to relate itself to Iron Age rather than to Bronze Age practice and apart from its employment of timber, not adequately attested yet in Greek work of any period,[244] may have been constructed of mudbrick on a stone foundation. The 'stakes' associated with the defences of Troy[245] and Scheria [246] may allude to similar outworks.

---

[234] That such may await discovery is far from being ruled out. In any case, in view of the Cypriot material (see below), it seems somewhat unlikely that the influence of local Anatolian practice over the period following on the Aeolian and Ionian migrations was a major determining factor in this regard. Further, at Troy itself the main brick superstructure had long since been replaced by one of stone (p. 97, n. 17). The construction of the upper part of the Buruncuk wall is admittedly unknown. But only at Smyrna does it seem possible that we may have a mudbrick fortification wall as late as the Late Bronze Age (pp. 68, 82, 121), although no definite pronouncement about even this can be made until such time as it has been possible to excavate it.

[235] *Liverpool Bull.* ii. 1–2. 33, 37–39, 53, figs. 2–3, 5.

[236] *SCE* ii. 476, 516, 518, 522.

[237] *JHS Archaeological Reports* 1954, 28, fig. 1.

[238] However, the gap after the Mycenaean period is not as yet bridged by datable Greek examples. John Boardman kindly informs me that he considers the citadel wall at Emborio, Chios (p. 115 n. 196), to have been entirely of stone and it may thus be, for the present, the earliest confidently dated instance of this construction in the Greek Iron Age (apart, of course, from the Wall 1 tower at Smyrna).

[239] However, in the environs of Smyrna itself, it is noteworthy that in the earlier circuit at the Bel Kahve hill-fort (p. 4, PLATE 5 *a*) part of the top of the socle is preserved with its level surface destined to carry a brick superstructure. The classical forts above the city (pp. 5, 134) were perhaps of all-stone construction like Wall 4 round the *tell*.

[240] Cf. Herodotus i. 178–9; Thucydides ii. 78, iii. 22–24.

[241] *Liverpool Bull.* ii. 1–2, 34–35, 54.

[242] p. 115 n. 194 above.

[243] *Iliad* vii. 436–41, viii. 343, ix. 349–50, xii. 28–30, 36–37, 258–60, 444, &c., xv. 1, 344–5.

It has already been suggested[247] that the characteristic Greek square crenellations were not improbably already in existence at the time of the early Smyrna walls, if not distinctly earlier. Wall 3 shows certain new features not evident in its predecessors. The most noteworthy of these is the stepping back of the crown of the stone socle,[248] an innovation first attested, to date, at Smyrna around the middle of the seventh century B.C. and persisting till its close. The existence of a 'pylon-and-court' type of gate has been conjectured on the west side of the Wall 3 circuit but is quite uncertain. But perhaps the most significant feature of all shown by Wall 3 is the way that it carries the tendency to sheer massiveness for its own sake, shown by Greek walls from Mycenaean times onward, to its logical conclusion. The enormous thickness of this wall must have been useless save from a prestige point of view. Only the front part of the vast *chemin de ronde* was of any real avail to its defenders. Walls as thick as this were not likely to be built again. It stands at the close of a tradition that was to be extinct in a generation.

In order to throw the simple conservatism of this earlier tradition into relief I propose to permit myself a very brief and rather arbitrary summary of the development of Greek fortifications over the succeeding period.

The sixth century, in contrast to the preceding ones in so far as we can as yet rather dimly discern them at Old Smyrna and elsewhere, was a period of much more marked change. In this regard I would instance two circuits, the 'Peisistratan' one at Eleusis[249] and the late archaic one at Buruncuk-'Larisa'. [250] The basic gate-type has remained the familiar 'overlap' gate, though it now assumes many variant forms. Towers are no longer confined in the main to gates. In addition they have been set at strategic points all round the circuit, so that in this regard Greek walls at last begin to approximate to time-honoured practice elsewhere. The towers themselves may have been still solid at Eleusis. At Buruncuk they are hollow and divided into one or more rooms. Indeed, between Towers II and VIII a kind of casemate construction is introduced into the very curtain of the wall. But such more truly oriental traits as this in the Buruncuk trace are exceptional. Greek military architecture had been revolutionized and in this revolution oriental practice had doubtless played a part. But Hellenic fortifications continued very definitely and significantly Hellenic, for all the change. The additional protection of the towers enabled a reduction in the optimum thickness of the curtain, a circumstance that is very apparent after the fantastic thickness reached by the seventh century B.C. circuit at Smyrna, although, as we learn from Vroulia,[251] such thickness was by no means invariable.

The two walls cited at Eleusis and Buruncuk are both of the same mixed construction—stone socle and brick superstructure. Contemporary all-stone walls tended to be similar in general arrangement. Where towers were absent or inadequate the 'indented trace' may by now have come into use to afford flanking protection, although its history over the long preceding period is not yet clear.[252]

---

[244] p. 108 n. 139; cf. also p. 99 n. 37.

[245] *Iliad* xviii. 177.

[246] *Odyssey* vii. 45.

[247] p. 110.

[248] pp. 98 f.. As has been seen there this may, however, be earlier in its beginnings and, in an extreme form, far-reaching in its structural implications for Ionian fortifications. But on both counts more evidence is needed.

[249] Noack, *Eleusis* pls. 24*b*, 26, 27*a–c*; Wrede, *Attische Mauern* figs. 10–13; *ADelt* xv. 104, fig. 24; plans *Archiv für Religionswissenschaft* xxxii. 67, *ADelt* xiv. παράρτ. (*facing* 30), Kourouniotis, *Eleusis, Guide to Excavations and Museum* (end).

[250] *Larisa am Hermos* i. 27 ff., 44 ff., 116 ff.

[251] p. 115 n. 194. Presumably there was also a long-maintained tradition in lighter defences capable of holding men at bay but not machines.

[252] The archaic examples cited by Scranton (op. cit. 154 ff., 186) rest purely on stylistic criteria or historical inference, but some of these seem attractive. On its isolated employment at Smyrna in classical times see p. 117 n. 229

In the fifth and fourth centuries B.C. these developments were carried still farther. Round towers came into use as well as square ones.[253] Further, the siting of the towers themselves also became more regular and systematic. The separate elements of face and fill in the stonework had already tended to merge and now great rigidity was often achieved in relatively thin curtains by heavy, through-going masonry. But although all-stone fortifications became commoner they never ousted the mudbrick ones. Apparently availability of materials and local prejudice continued the determining factors as to which construction was used. To the ordinary Greek battlement with square crenellations the 'window battlement' was also added by some stage in the fourth century B.C.[254] The form taken by the gates still most commonly approximated to the old 'overlap' type,[255] although a simple opening is found for posterns[256] and the 'pylon' type was not uncommon for main gates. Their tower protection, already much elaborated in archaic times, was considerably developed. The gates themselves still continued most commonly of the two-leaved square form with flat horizontal lintels. However, corbelling was not infrequent over classical gates and a quite common device was its partial employment to decrease the span of the lintel block.[257] Finally, with the close of the classical period, the Orient bequeathed to the West the true arch as a means of roofing gateways.[258] Its highest development to date had perhaps been seen in the 'hanging gardens' of Babylon.[259] May we look to Macedonia as the transmitter of this much older invention whose potentialities had been so long neglected?[260]

IV. THE HISTORY OF THE IRON AGE FORTIFICATIONS OF OLD SMYRNA

The literary evidence for the history of the early Greek city of Smyrna has been assembled by C. J. Cadoux[1] and correlated with the archaeological findings by J. M. Cook.[2] On all the broader aspects of the subject the reader is referred to what they have written. Here I purpose to do little more than provide a short account of the Iron Age fortifications of Old Smyrna *on a chronological basis*. In order to present the stratigraphical sequence as a coherent whole at each point, the detailed description of the remains revealed in the excavations has had to be arranged partly on a spatial framework and the overall chronological aspect has had to be deferred for treatment here. It is hoped that the reader may find in the cross-references from this section a useful key to all the other parts of this study. In addition to having it fulfil this index function, I shall also use this concluding portion to deal with certain questions, such as the circumstances of Alyattes' capture of Old Smyrna, the evidence for which was too widespread and general to be considered under the many heads of the detailed description.

---

[253] Cf., however, p. 115 n. 195. At Smyrna one may instance the construction by the Wall 4 north-east gate (p. 73, FIG. 18, PLATE 16 *c*) and, more appropriately, that at the north-east of the upper classical fort (pp. 5, 134, FIG. 36).

[254] p. 111.

[255] Mantinea is a good example: Fougères, *Mantinée et l'Arcadie orientale* 137 ff.

[256] Commonly, however, covered from a tower or salient.

[257] At Smyrna this construction is attested by the gate to the upper classical fort—Weber, *Le Sipyle et ses Monuments*, pl. 1; *ÖJh* xxi–xxii. 225, xxvii. 140 ff., fig. 68; H. Miltner, *Eski İzmir* 4 ff., fig. 5; Cadoux, *Ancient Smyrna*, pl. facing 41 top. Here pp. 5, 134 ff.

[258] *Corinth* iii. 2. 107 ff., 121 ff.

[259] Koldewey, Wetzel, *Die Königsburgen von Babylon* i, *Die Südburg* 38 ff., pls. 5–8.

[260] Not that the north Greek material is any better dated than that anywhere else in Greece (apart from Corinth) or Asia Minor; however, some of the Macedonian vaulted tombs have been dated, perhaps rather sanguinely, in the fourth century B.C. (e.g. *BSA* xxiii, pl. xii; *BCH* lxxix. 276, figs. 10–11). See now further A. W. Lawrence, *Greek Architecture* 229.

[1] C. J. Cadoux, *Ancient Smyrna* 23–104.

[2] pp. 9 ff.

1. Before the Building of Wall 1

The date of the arrival of the earliest settlers from Greece at Smyrna, and the problem whether it corresponds with, or is earlier or later than, the start of the flow of Greek Protogeometric pottery on the site, will doubtless emerge much more clearly when the detailed studies of the painted and Monochrome wares and the metal and other objects of the period from the site have been presented.[3] But, however the matter may be, it at least appears probable that the appearance of Greek Protogeometric pottery at Smyrna falls at a time of ethnic change. Corresponding differences have been detected in this period in the fabric and shapes of the Monochrome vases[4] and the forms of domestic architecture may have undergone alterations as well.[5] In addition, this period seems also to have witnessed a considerable modification of the mudbrick standard.[6]

The pre-Protogeometric Monochrome city already had a long history of occupation behind it, perhaps as a fortified town.[7] In any case it was a flat-topped *tell* with fairly precise limits. To the north[8] and east[9] and probably also the west[10] its extent seems to have been almost as great as that of the final stage of the *tell*. To the south it was probably much smaller than the later city.[11] Its limits on this side are not yet exactly known. However, the reader may be able to form a very approximate idea of its shape by visualizing where a 7-metre contour line would fall on the plan of the *tell*,[12] for the subsequent extension to the south failed to achieve the full elevation of the original occupation mound.[13] It seems not improbable that this pre-Protogeometric city may have been fortified. Mudbrick and stone debris, presumably from a fortification, occupied the north edge of the *tell*[14] and seem also to have extended some distance in.[15] But, whatever its nature, this construction seems to have been in a state of collapse not only in the Protogeometric period but also at the time of the Monochrome levels immediately preceding it.[16] Indeed, it seems unlikely that its erection can date any later than the Late Bronze Age.[17] After the collapse of this structure still in pre-Protogeometric times no further permanent fortifications seem to have been built around the *tell* itself until the beginning of the Middle Geometric period. Temporary defence works such as stockades there may have been, but it is noteworthy that in the (admittedly very limited) areas of the edge of the *tell* in the intervening period, cleared to the north and north-east of the city, no traces even of these have been revealed.[18] Yet it seems hardly conceivable that the young Greek colony should have been quite undefended on the landward side in its tenderest years. Perhaps a wall ran across the narrowest part of the neck of the isthmus some way out from the edge of the *tell*, but this hypothesis, though attractive, still awaits excavational confirmation.

---

[3] Thus the analysis by Dr. Baki Öğün of the Monochrome and bucchero pottery must be awaited with interest, in particular if we wish to learn whether or not there is any break in the antecedent Monochrome sequence. Further excavation to provide Mycenaean evidence for the dating of the latest purely Monochrome levels would be a great help, since the handful of Mycenaean sherds so far recovered (*JHS* lxxii. 104, fig. 10) were from a Protogeometric context and seem to have been thrown up by pits of that date.

[4] p. 10.

[5] See the forthcoming accounts of the Iron Age domestic architecture and the Bronze Age levels.

[6] p. 102.

[7] Cf. p. 39.

[8] Apart, of course, from the subsequent accumulation of the siege-mound. For possible debris from its last circuit wall see pp. 68, 82, PLATES 8–9, FIG. 25. The Monochrome occupation levels towards the north edge of the main occupation probe show that here the earlier settlement spread out as far as its immediate Iron Age successors (cf. pp. 9, 82, FIGS. 24, *b–c* (and under parts of *f, h, n*), 25).

[9] Cf. p. 66. The deep-level probe in Jxviii–xix (pp. 9, 39) affords a fixed point not far from the east edge of the Iron Age cities that is safely *inside* the settlements of the Middle and Late Bronze Age.

[10] The presence of Early Bronze Age habitation in MNxiv suggests that in this vicinity the westerly limit of the settlement may not have changed greatly from that period until the collapse of Iron Age Wall 2.

[11] p. 39.

[12] PLATE 74.

[13] Despite such phenomenal undertakings as the Wall 1 platform fill (p. 41) the southern part of the later city suffered severely from erosion (cf. pp. 55, 66 n. 136; also on the erosion of the southerly edge of the Bronze Age *tell* cf. the exposure of the rock outcrop in Nxiv, p. 1).

[14] p. 68, PLATE 8; p. 82, PLATE 9; p. 118 n. 234.

[15] p. 82, PLATE 9, FIG. 25.

[16] p. 82, PLATE 9, FIG. 24, *b*, FIG. 25, on the Monochrome habitation overlying it.

[17] The dating of these pre-Protogeometric Monochrome levels is most uncertain. An absolute chronology certainly cannot yet be advanced with the pottery unstudied and the investigations confined to small soundings lacking correlation.

[18] p. 68, PLATE 8; p. 82, PLATE 9. At both these points the crown of this pile of debris where one might expect such a stockade to be set seems to have survived relatively intact. Cf., however, p. 82 n. 211.

2. WALL 1

This, the first Iron Age city circuit of which we have traces, seems to have been built in Middle Geometric times. Apart from a stone outer-face foundation the greater part of it was apparently constructed of mudbrick,[19] but to enhance the appearance of the tower that seems to have flanked the north-east gate[20] the mudbrick superstructure had been replaced by one of white stone ashlar blocks backed with earth. The sophistication of the construction of the latter no less than the existence of a fixed mudbrick standard over these years[21] argues the possibility of much more elaborate architecture in this period than is attested by the homes of the ordinary citizens.[22] Although a massive construction by any ordinary standards, this wall was much less thick than its two immediate successors at Old Smyrna.

Wall 1 seems to have revetted the north,[23] east, and probably west sides of the original *tell*, the erosion that had taken place over the long intervening period of neglect being made good by an extensive fill of river boulders piled in behind its inner face. To the south, however, it broke new ground,[24] enclosing a considerable additional area that had become silted up in the interval. Its course to the extreme south is uncertain, but probably it followed much the same line as Wall 2,[25] curving round to the north-west[26] on a smaller circuit than that later followed by Wall 3. The builders of Wall 1 also attempted to raise part at least of this new ground to the south up to the level of the original *tell* by piling in an extensive fill of boulders behind the wall.[27] There seems to have been a gate at the north-east corner of this circuit,[28] but there appeared to be nothing to suggest that there was also a further one to the south-east as in Wall 2.[29] It remains unconfirmed but by no means improbable that convenience may have dictated the placing of a further entrance somewhere on the west side of the city.

Towards the north-west the construction of this wall was securely dated to the beginning of the Middle Geometric period[30] and the building of the tower at the north-east gate must have fallen at about the same time.[31] Indeed it seems that the erection of the northern parts at least of Wall 1 is probably to be placed no later than the second half of the ninth century B.C. and quite probably earlier. However, the building of this wall may have been a protracted business because of the extensive terracing that went on at the same time behind it. To the east, in Section λ–λ', it seemed as though its construction may have been as late as the beginning of the eighth century B.C.[32]

So far as can be judged from the areas cleared, Wall 1 was the first Iron Age circuit of any kind to enclose the *tell* as such. The latest Bronze Age circuit, if such it in fact was, had long since ceased to figure as a defence work. Now the Herodotean anecdote concerning the circumstances of the Colophonian capture of the city from the Aeolians[33] presupposes that the city was already fortified. If any reliance is to be placed on such details of the tale, it still does not necessitate the down-dating of the Ionian seizure of Smyrna to a period after the completion of Wall 1 (i.e. presumably to the early eighth century B.C.), since the requirements of the anecdote would easily be met by a wall away from the edge of the *tell* across the neck of the isthmus.[34] Until such time as pumping equipment is available to explore the isthmus systematically uncertainty on this issue must persist. However, the ceramic evidence suggests a date distinctly before Wall 1 for the Ionian *coup*,[35] and, if subsequent exploration should in fact reveal that the completion of Wall 1 does afford a *terminus post quem* for this event, then we shall probably be forced to consider the Ionian action as giving political substance to a commercial dominance that had already lasted for a considerable period.

---

[19] pp. 40, 82, cf. also p. 56; on the implications of this construction, pp. 100 ff., 107 ff., 117 ff.; see further FIGS. 2, 7, 10, 24, PLATES 7, 9, 10 *a*.

[20] pp. 68 ff., 95, 97, 106, FIGS 18, *f*, 19, 30, 32, PLATES 8, 16 *b*, 17 *a–c*, 18 *d*.

[21] pp. 102, 104 f.

[22] At this early date perhaps more likely to be found attested in palaces or princely dwellings than in public temple buildings?

[23] pp. 68 ff., 75, 82 ff.

[24] pp. 40 f.; cf. FIG. 7.

[25] Cf. pp. 56, 123.

[26] pp. 65, 123.

[27] p. 41.

[28] pp. 68 ff.

[29] p. 53.

[30] pp. 82 ff.

[31] p. 68.

[32] pp. 40 f. The dating material was, however, extremely limited and undue stress cannot be placed on the presumed chronology of isolated sherds. But a securer dating for this part of the Wall 1 circuit can probably only readily be obtained by digging the inner edge of the 'platform fill' where it abuts on the original *tell* and where occupation pottery may be expected to be plentiful.

3. WALL 2

No real answer is yet possible to the problems just raised. However, it is noteworthy that within a very short time after the completion of its later parts[36] Wall 1 was replaced by another circuit, Wall 2. Further, nothing has been found so far to suggest that Wall 1 was already in a bad state of repair and certainly it does not seem to have been the victim of a natural catastrophe as was later to be the fate of its successor. With Wall 2 certain fresh developments manifested themselves. The thickness of the mudbrick standard was drastically reduced[37] after centuries without change. Also the first of the platforms to the west of the north-east gate where the temples later stood was built at this date.[38] It is not known whether this served a religious purpose like its successors, but the large-scale public cult at this point does not seem to have been instituted till after 700 B.C.[39] But most significant of all at this juncture is the fact that with Wall 2 there came into vogue the custom of building fortification walls of a thickness far in excess of any practical considerations of strength or fire-power,[40] although the greater thickness seems to have enabled the height of the fortifications to be increased.[41] We seem to be faced with a kind of obsession that saw security in sheer breadth, and this persisted until the capture of the city by Alyattes.

The socle of Wall 2 was in places entirely of stone,[42] but more often had a 'core' of mudbrick in the middle of it. The superstructure of the wall was of mudbrick. There was again a gate at the north-east corner of the circuit.[43] South of this Wall 2 followed much the same line as Wall 1 had done,[44] but at the south-east corner of the city a further gate seems to have been sited, flanked by an 'overlap' in the wall.[45] Thereafter the line curved round to the south-west[46] and west[47] and probably extended on around to the north-west on a smaller circuit than that later followed by Wall 3.[48] It apparently then continued on, revetting the west and north sides of the original *tell*,[49] to link up again with the north-east gate. It would seem not unreasonable to suppose that, in addition to the north-east and south-east gates opening on to the anchorage in the estuary, there may also have been a further one somewhere on the west side of the city that gave access to the isthmus and the sea.

---

[33] i. 150.

[34] Cf. p. 122 above. An alternative, and less probable, theory is that a temporary wall-line or stockade did in fact enclose the *tell* but that it did not follow the edge of it but was located in the low ground outside it. Such theories, too, we were not equipped to test.

[35] p. 13.

[36] pp. 40 f. Cf. n. 32 above.

[37] pp. 103, 104 f.

[38] p. 77.

[39] pp. 15, 124. Cf. p. 77 n. 189.

[40] pp. 116, 119.

[41] p. 41.

[42] e.g. p. 53. On the general structural questions see: stone fill, p. 96; stone faces, pp. 98 f.; brick 'core', pp. 100 ff., 103, 104 f.; brick superstructure, pp. 106 ff.

[43] pp. 71 f.; FIG. 18, PLATES 8, 17 *d bottom*.

[44] pp. 66, 41 ff., 52; FIGS. 2, 7, 18, PLATES 7, 10. On the projecting step at the base of its inner face in Section λ–λ′ see also p. 114 and FIG. 35.

[45] p. 53, FIGS. 2, 8.

[46] pp. 56 ff., FIGS. 10, 13.

[47] p. 64.

[48] pp. 65, 94.

[49] pp. 91 f., 84, 77 ff.; FIGS. 21–22.

Parts of Wall 2 using the new brick standard were dated to shortly before and after the middle of the eighth century B.C.[50] It has been suggested that the brick-work at the north-east part of the circuit[51] that either showed dimensions still approximating to the Wall 1 standard, or else displayed a wide range of intermediate sizes, may have represented a very slightly earlier stage when the new standard was not yet fixed.[52] But it seems clearly to be nevertheless part of one and the same building-phase as the rest of the circuit. And we shall probably not be far wrong if we regard Wall 2 as being under construction in the second and third quarters of the eighth century B.C.

4. THE COLLAPSE OF WALL 2; WALL 2/3 AND OTHER CONSTRUCTIONS OF THE INTERMEDIATE PERIOD

After a life of about half a century Wall 2 suffered a sudden and widespread collapse. A fault-line splitting the mudbrick 'core' of the tower at the north-east gate[53] and the large coherent masses in which much of the superstructure had fallen[54] seem to leave little doubt that this collapse was caused by an earthquake. It was clear that the fortifications had already perished by a date early in the seventh century,[55] but the date of the calamity could not be closely fixed by evidence from the perimeter of the city alone. But the findings in the occupation levels inside the walls indicated that all buildings then standing came to an abrupt end about 700 B.C.[56] This destruction yielded hardly any weapons (for an isolated exception see p. 131 n. 1) or other signs of violence, and was apparently a natural disaster produced by the same earthquake that destroyed the fortifications. Thereafter the building sequence continued uninterrupted until the city was sacked by the Lydians under Alyattes.

A number of other remarkable changes occurred at more or less the same time as the earthquake. At precisely this point the standard of living of the ordinary citizenry began to be radically altered. Immediately after the earthquake the small, rounded, thatched mud-huts of the populace started to be rebuilt in the form of splendid rectangular structures with many rooms.[57] Admittedly the full flower of seventh-century private architecture could not be attained until the mudbrick standard was enlarged towards the middle of the century,[58] facilitating the erection of two-storied houses, but the changed situation that ultimately gave rise to this seems to date to the very beginning of the century. It is not yet clear how far these modifications arise from an overall increase in wealth over the whole Greek world as a consequence of widening commercial activities, and how far they are the product of purely local changes in the status of Smyrna herself; nor can we gauge how far they represent a fresh access of prosperity over the whole city, and how far a social revolution producing a greater equality than had existed before. The large-scale public cult in the temple to the west of the north-east gate also began at precisely this time,[59] bringing with it the advent of monumental religious architecture.

---

[50] pp. 43, 53, 91.

[51] p. 103.

[52] The new standard may thus, on the present chronology, have been first adumbrated and finally established in the second quarter of the eighth century B.C. Whether this circumstance has any wider implications (cf. p. 123 above) it is impossible to say.

[53] p. 72, PLATES 8, 17 *d*—well down near the water. The Wall 3 brick above was subsequent to this fault, which consequently must be the product of a considerably earlier tremor than that which occurred in the sixth century B.C. (pp. 79, 87).

[54] Most notably p. 53, FIG. 8, and perhaps also p. 91.

[55] e.g. pp. 43 f., 53 ff.

[56] pp. 14, 139 ff. (Group E).

[57] pp. 14, 55, 86.

[58] p. 103.

[59] pp. 15, 77.

But an even more startling change occurred at about the very beginning of the century. Immediately after the earthquake the city seems suddenly to have burst her bounds, and areas far beyond the limits of the original *tell* began to be built up[60] apparently without any fear of possible attack. Indeed the refortification of the *tell* itself proceeded at a leisurely pace[61] and was not completed until the close of the seventh century.[62] The earliest fortifications at Bel Kahve may belong to this period following the earthquake at Smyrna,[63] and it may be that throughout the greater part of the seventh century the city's defences were regarded as lying at the limits of her territory.

It is against this bewildering background that we have to set the attack delivered against Smyrna by Gyges of Lydia in the early years of his reign.[64] At the outset let us state the most perplexing circumstance of all, that archaeological evidence of this assault seems quite to be lacking. The weapons that tell so much about the later Lydian attack[65] are silent about this one. Indeed no levels seem to be quite so barren of instruments of war as those of the first half of the seventh century B.C. at Smyrna. As to the statements preserved in later writers that the city was either captured for a brief period or withstood a protracted siege, we can only draw attention to the circumstances that there is no identifiable destruction stratum between the earthquake and the sack by Alyattes, and that the fortifications were hardly in a condition to be manned or defended.[66] The seventh-century levels at Smyrna have been explored quite extensively. Is it possible that the action against Gyges may have been fought somewhere else, as, for example, at the fortress at Bel Kahve at the entrance to the territory of Smyrna?[67]

The Cimmerians, too, seem to have left the city unscathed. But in the face of this troubled century the *tell* was gradually refortified. To the north of the temple the city wall seems to have been rebuilt in the early seventh century,[68] and much of the fine Lesbian wall on the west side of the city may have been set up at about the same time.[69] The fortifications of the north side of the city were extended round to the north of the main occupation probe in the second quarter of the century[70] and the rebuilding of the north-east gate was perhaps not much later.[71] Indeed, by the middle years of the century the north side of the *tell* may have been completely refortified. The east and south sides, however, remained quite defenceless, whilst the situation on the west side has not yet been sufficiently ascertained.

These earlier seventh-century traces were doubtless incorporated in the late seventh century (i.e. Wall 3) circuit of which they eventually formed an integral part. However, they have been given the distinguishing name of Wall 2/3 in that they present their own peculiar problems of interpretation. The mudbrick that they used was essentially of Wall 2 dimensions.[72] There is normally no danger of confusion between Walls 2 and 2/3, but difficulties do occasionally arise.

---

[60] pp. 15, 91 f., PLATE 1 (the area shown stippled).

[61] See below, pp. 125 f.

[62] p. 126.

[63] pp. 4, 115 n. 197, 118 n. 239.

[64] For the source material see Cadoux, op. cit. 78 ff., p. 14.

[65] pp. 25, 129 ff.

[66] The faint possibility remains, and it is a very faint one indeed, that, despite the physical difficulties and the absence of surviving traces on the hill-side (cf. p. 128), the vast extramural habitation area was fortified and that it was its circuit that came into question on this occasion; this seems unlikely, but the possibility cannot be denied without far more extensive exploration.

[67] It seems at least desirable to point out that the chronology usually accepted (and here used) for Gyges rests on the Assyrian identifications. If, for example, the Herodotean chronology be adopted, then Gyges' attack will take place in the late eighth century B.C. shortly before the earthquake that destroyed the city's defences. Such a hypothesis would allow of a siege; but, although damage arising from the assault would be almost indistinguishable in some cases from that caused by the earthquake, yet the rarity of weapons in the earthquake stratum would probably still preclude the possibility of a sack. Or is our pottery dating too high? On Lydian Chronology see *Historia* vii. 1 ff.

[68] p. 79. The date is based on a small amount of pottery actually found in the mudbrick. See also p. 103 and FIGS. 21, 23.

[69] pp. 93, 98, FIG. 29, PLATE 20 *c*.

[70] pp. 86 ff., 98, 103, FIG. 24, PLATES 9, 19 *b* and *c*.

[71] pp. 72 f., 98, 103 n. 92, FIG. 18, PLATES 8, 16 *c*.

[72] p. 103.

Thus the faint possibility remains that part of the Wall 2/3 mudbrick 'core' in Section η–η'[73] might originally have belonged to Wall 2. It is also perplexing that where Wall 2/3 occurs in Section θ–θ'[74] as well as in Section η–η' there are no surviving traces of an anterior Wall 2 construction.

To the east and south the fortifications were not yet rebuilt and the crumbling edges of the city were put to far other uses. One of the most curious of these seems to arise from a change in child-burial customs apparently dating to the second quarter of the seventh century B.C. Hitherto, when a young child died it seems simply to have been buried under the floor of the house or in the ground immediately outside it. Such a custom was attested in the Monochrome levels[75] and was probably quite frequent in Protogeometric and Geometric times, at least to judge from the incidence of disturbed human skeletal fragments in the occupation levels. It was arrested as late as the close of the Geometric period[76] and the early seventh century.[77] Thereafter the interment of children inside the city seems to cease and instead they began to be buried at its very edges. This changed practice seemed to be in evidence as early as the second quarter of the seventh century B.C.[78] and continued thereafter until the abandonment of the city in the fourth century B.C.[79] The custom of the intramural interment of young children is perhaps attributable to the notions that their mortal remains did not constitute a pollution like those of an adult and that their tiny ghosts were friendly ones.[80] Apparently in the seventh century B.C. at Smyrna some modification in this attitude occurred, but children, whether babies or young adolescents, were still buried apart from adults,[81] outside the city admittedly, but as close as possible to its very edge.

To this period when much of the city still continued unfortified is probably also to be assigned the original construction of a fine corbel-vaulted stone fountain-house to the south of the city.[82] A late seventh-century development, but still anterior to the building of Wall 3 in this area, was the terracing of the edge of the Wall 2 debris in Section λ–λ',[83] possibly with a view to bringing a road up over the top of it at the point where, prior to the earthquake, the Wall 2 south-east gate seems to have stood.[84]

5. WALL 3

Although parts of the Wall 3 circuit had been built much earlier in the seventh century,[85] it was not itself completed until around the close of the century, material from its latest parts being almost indistinguishable from that of the Lydian sack of the city. Indeed, it seems not improbable that this completion of the fortifications of the *tell* may have been carried out to meet the threat of Lydian attack. This wall had a socle of stone, most commonly with a mudbrick 'core' in the middle of it, and a superstructure of mudbrick. The later parts of this wall, built after the intermediate Wall 2/3 stage, used bricks of the larger standard introduced towards the middle of the seventh century B.C.[86]

---

[73] p. 86 n. 226.

[74] p. 79.

[75] e.g. such a burial was made at E8.xii9 under a floor occurring at about 6·8 m. above sea-level (cf. the section, FIG. 25).

[76] By the burial in the temple area, FIG. 21, *y*, p. 77 above.

[77] At G4.xii by the child burial in an amphora appearing in Section η–η' (PLATE 9).

[78] pp. 44 ff., 55, FIGS. 3–4, PLATE 11.

[79] pp. 48, 49, 66, 93, FIGS. 5, 28.

[80] For further views on the subject see *CR* xvii. 83 ff.; Eitrem, *Hermes und die Toten* 4 ff.; Nilsson, *Geschichte der griechischen Religion* i². 175.

[81] The seventh-century B.C. adult cemeteries have still to be discovered at Smyrna; they probably lay quite a distance from the city because of the extensive extramural settlement. However, the burial grounds in use from the sixth century B.C. onwards are extensively known (see PLATE 1).

[82] pp. 58 ff., 124, FIGS. 10, 12–15, PLATES 14–15.

[83] pp. 46 f., PLATES 7, 12 *a*, *b*.

[84] pp. 52 f., 123.

[85] See immediately above on Wall 2/3.

[86] p. 103.

Once again there seems to have been a gate at the north-east corner of the city.[87] Beyond this the wall-line ran off to the south-east.[88] At E3.xix3 the point may have been reached where the main late-seventh-century stretch of this wall joined up with the portion that had been built earlier in the century.[89] Thereafter the wall curved round to the south and continued straight for a considerable distance.[90] Its inner edge seems to have followed that of its Wall 2 predecessor. In particular, the incorporation of the standing remains of the apparent old Wall 2 south-east gate gave Wall 3 a remarkable thickness and an erratic inner face.[91] Beyond, it rode up over the top of the debris from Wall 2 and for a space to the south actually followed a somewhat smaller circuit than that wall had done.[92]

However, it seems clear that this shallow-footed wall to the south represents either the original Wall 3 construction or a subsequent rebuilding of it. Investigators in 1951 claimed to have found classical material in its fill near the south-east corner, but a re-examination suggested that this was confined to areas where there had been subsequent disturbance. The present outer face of this wall is later than the fountain-house,[93] but, although the latter was in use in classical times, it seems likely to have been built considerably earlier.[94] Indeed, on the evidence before us, the simplest solution seems to be to regard this shallow stretch as the original Wall 3 construction in this area. Either because of the additional protection afforded by the nearby sea or because of haste in its construction, Wall 3, then, at this point was less deeply founded than elsewhere. In point of fact it stood at the top of a steep earth slope formed by the Wall 2 debris and as far as this extended it was turned to advantage. Above this slope it seems that the stone socle may have been less in height than farther to the north.[95] The height of the brick superstructure above cannot be gauged, but it is noteworthy that the whole wall abates but little in thickness at least, remaining a steady 9¼ to 10 m. broad all round the south.

Towards the south-west it apparently extended straight on beyond the Wall 2 line[96] and, as it left the Wall 2 debris behind, became as a consequence once more very deeply founded. It seems possible that the finer work at the south-west corner may represent a slightly earlier and more leisurely construction phase than the shallower wall to the east of it. It would appear that the west side of the Wall 3 circuit lay farther out than that of its predecessors. Probably most of it lies under the platform of debris that today supports the Bayraklı–Bornova road. In that case it extended some way to the west of the original *tell*, and the fine Lesbian wall[97] just below the latter may have lain inside the Wall 3 circuit. This wall appears to have been extended to the south-east in the late seventh century B.C. It does not seem to represent an external face and it has been suggested very tentatively that it may have fronted on to a court behind a main gate.[98]

Presumably after continuing northwards a space Wall 3 swung round to the east[99] and, passing through the later siege-mound,[100] went on round the north edge of the *tell*[101] to link up again with the north-east gate.

A highly speculative interpretation of the possible appearance of the city at this stage is given elsewhere.[102] There, in addition to the north-east gate, it has been assumed that there were other entrances at the north-west and south-west corners of the circuit. Convenience lends some plausibility to these suggestions, particularly in the latter case, since the old south-east gate had been sealed up. It is more uncertain whether there would have been at the same time both a gate at the north-west corner of the circuit and one to the west where the Lesbian wall stood.

---

[87] pp. 72 f.; see above, p. 125 n. 71.

[88] pp. 73, 65 ff.

[89] pp. 66 ff, 98 ff., FIGS. 16–17, PLATE 16 *a*.

[90] pp. 65, 48, 52, cf. p. 98, FIGS. 2, 7, PLATES 7, 12 *c*, *d*.

[91] pp. 52 f., FIGS. 2, 8, PLATE 13 *a*, *b*.

[92] pp. 52, 57 f., 64 f., 98, FIGS. 10, 11, 13, PLATE 15 *c*—*rear*.

[93] p. 58.

[94] p. 61.

[95] p. 98.

[96] p. 65; on the 'step' against the inner face see p. 114.

[97] p. 93, p. 125 n. 69.

[98] p. 94 n. 277.

[99] The seventh-century debris shown in FIG. 28 (p. 93) might be from it.

[100] p. 88.

[101] pp. 86 f., 79, 125 nn. 68, 70.

[102] p. 15 FIG. 3.

It is also unknown whether the extensive settlement outside the original *tell*[103] was ever defended by any kind of temporary or permanent circuit.[104] The stretch of wall described by Prokesch von Osten[105] on the hillside north-west of the *tell* probably cannot be cited as evidence that it was. The round tower on it mentioned by Prokesch would seem to argue a date not before classical times for this wall, an impression perhaps somewhat strengthened by a few face-blocks possibly from it observed in the modern village.[106] Also, the surviving traces of what may have been a wall linking it to the defences of the *tell*[107] are certainly of fourth-century date. Actually, the settlement seems to have spread from the *tell* on to this part of the hillside not only in the seventh century but also in the sixth and fourth centuries B.C., and our own surface findings in this respect seem to be confirmed by those of Prokesch, who reports tiles, presumably of classical date,[108] within the area enclosed by his wall. This classical settlement was hemmed in to about the conjectured limits of Prokesch's circuit by the contemporary cemeteries,[109] but the seventh-century habitation outside the *tell* seems to have been far more extensive, apparently lying on both sides of the estuary and occupying much of the later cemetery area as well. Its scattered nature may possibly argue that it was not originally meant to be defended, and certainly there are no surviving surface indications of a more far-flung outer circuit wall on the hillside to the north of the *tell*. Some uncertainty must remain, but on this point there can be little doubt: when Smyrna faced the attack of Alyattes the main defence on which she pinned her faith was probably the fantastically thick fortification system (Walls 2/3 and 3) girdling the *tell* itself.

6. THE LYDIAN CAPTURE OF SMYRNA

The tale that follows is one of war, bitter and unrelenting. Alyattes of Lydia marched against Smyrna.[110] Whether or not any attempt was made by the inhabitants to defend the outlying part of the city, a situation presently developed in which the Lydians controlled such of the town as lay beyond the *tell* and the Ionians stood siege within the massive ramparts of Wall 3. We do not know whether Alyattes was able to press his siege by sea as well as by land, but it may have been his failure to do so as much as impatience that led to the next stage in the drama. To the north-west of the fortified *tell* the Lydians seem to have raised a great mound.[111] For materials they used earth and the branches of trees[112] and apparently also stones, bricks, and timbers from the houses of the part of the city already in their hands.[113] The art of employing such siege-mounds had been developed by the Assyrians and was later to be adopted by the Persians[114] and the Greeks themselves.[115] At Smyrna it is noteworthy that the original crown of the mound was well out to the north of the Ionian circuit.

---

[103] pp. 15, 91 f., 125.

[104] Cf. p. 125 n. 66.

[105] p. 36 n. 2.

[106] pp. 135 f.

[107] pp. 92 f., 135.

[108] Tiles were unknown at Smyrna in the seventh century B.C.; indeed they do not even occur in the sixth century, although this circumstance is probably rather to be seen as testimony to the reduced importance of the town in the Lydian and Persian periods. They do not in fact make their appearance until the later fifth century B.C. In the fourth century they are extremely common.

[109] See PLATE I.

[110] pp. 23 ff.; Cadoux, op. cit. 84–85; on the date see also pp. 143 ff. (Group H).

[111] pp. 24, 88 ff.

[112] Perhaps these timbers were intended to restrict the collapse of the mound in the event of its being undermined (cf. Thucydides ii. 75–76; such mines seem to have been excavated at Paphos, *Liverpool Bull.* ii. 1–2. 33 ff., 53 ff.), but they did not seem to have been laid in any order.

[113] pp. 91, 125. If, as seems likely, the cylindrical beams are from the planking of house-roofs, their architectural implications are considerable.

[114] Cf. Herodotus i. 162. The siege-mound excavated at Paphos in Cyprus has been attributed to the Persians (loc. cit.). It may further be asked whether the great mound (variously interpreted in the past as a temple site, a natural hill, and a tumulus) against the south-east part of the fortifications of the Lydian period round the Küçük Hüyük at

The ensuing action was essentially one fought with long-range weapons, namely the bow and the sling. Its tale is best told by the arrows that peppered the city and the mound.[116] Their distribution seems to be of real significance and I offer here a preliminary assessment of the excavational data in this respect.[117] If we confine ourselves temporarily to the arrowheads of bronze[118] we find that four main types occur, viz.:

(*a*) A small socketed type with three flanges on its blade, referred to as 'triangular' in the lists below.[119] This variety, even in the early form in which it occurs at Smyrna, has a remarkably wide distribution and is certainly not of Greek or local Anatolian origin.[120]

Gordion may not also be in fact a siege-mound (see the air photographs: *Archaeology* iii. 196, fig. 1; vi. 159, fig. 1, and the plan: *Archaeology* iii. 197, fig. 2; *AJA* lx, pl. 95 fig. 52). The details of the recent excavations as they have been disclosed to date seem to fit such a hypothesis uncommonly well (*Pennsylvania Mus. Bull.* xvii. 4, 26 ff., *Archaeology* vi. 159 ff., *AJA* lxi. 324, lxii. 140–1). If this interpretation is correct, then this mound probably represents the point at which the forces of Cyrus carried the defences of Gordion.

[115] Thucydides ii. 75 ff.

[116] The sling-bolts would seem to have been confined to rounded stones. As even the identification of these is a somewhat subjective matter, it was not possible to obtain statistics for them. Metal bolts appear not to have been used.

[117] This is simply based on the routine inventory descriptions and excavators' notes and must contain many imperfections. It will be completely superseded later by the detailed publication of the weapons from the site save in one important respect: a considerable part of this material has not survived cleaning and storage and the statistics that follow, with all their inadequacies and probable occasional inaccuracies, will still constitute the fullest record we shall have of the distribution of the different types over the field of battle.

[118] The iron ones are much rarer and they do not have the same clear typology.

[119] pp. 131 ff. The name has been chosen for simplicity only and implies nothing as to the section of the head, which is definitely three-flanged.

[120] The Smyrna material has already been referred to by Miss Lorimer, *Homer and the Monuments* 294 n. 7. An example is illustrated on PLATE 6*d*. In view of the wide distribution of this variety it is not possible to give an exhaustive bibliography in this space. The following instances from the Greek and Anatolian regions may serve as a guide to the reader as to the appearance of the type:

Athens: Dodwell, *Tour in Greece* 159, fig. 2 (right-hand example); *Acropolis*: *ADelt* i. παράρτ. 28, fig. 29 θ, ι, κ; *North slope*: *Hesperia* ii. 341, fig. 13*a–c*; iv. 114, fig. 4 (middle row and left part of upper row).

Thermopylae: *AA* 1940, 200, fig. 47 (except examples in centre); *AJA* liii. 700, fig. 3.

'*Marathon*' (the British Museum and Karlsruhe material shows a strange diversity in date): *British Museum Guide to Greek and Roman Life*² fig. 102 (top row, third to fifth from left); Schumacher, *Beschreibung der Sammlung antiker Bronzen, Karlsruhe* 144 ff. no. 748, pl. xiv. 28; examples in Breslau referred to by Walter, *AA* 1940, 200.

Olympia: *Olympia* iv. 178, pl. lxiv, especially nos. 1083–8; *Olympische Forschungen* i. 162 ff., pl. 69*l–o*.

Delphi: *FD* v. 97, fig. 338.

Asine: Persson and others, *Asine* 334.

Olynthus: *Olynthus* x. 397 ff. 'Type F', pls. cxxv–cxxvi.

Chios: *BSA* xxxv. 151, pl. 32. 13–14.

Dodecanese: *BMC Bronzes* nos. 2803, 2807; *Lindos* i. 196 nos. 608–10, pl. 23.

Smyrna area: Behn, *Vorhellenistische Altertümer der östlichen Mittelmeerländer* no. 427.

Various: *BMC Bronzes* 346, 'Type F'; *Coll. Gréau* 142.

Cyprus: Richter, *Metropolitan Mus. Cat. Bronzes* 404 nos. 1487 ff.; Cesnola, *Atlas* iii, pl. lxxiii. 4; Myres, *Cesnola Coll.* 490 no. 4789; cf. also the classical varieties, *SCE* ii, pl. clxxiv (Type 8); iii, pl. xlv (Type 3) and pls. lxxxvii. 9, cxlix. 4–5.

Gordion: *Archaeology* vi. 166, fig. 10 (two right-hand ones).

Alişar: *Chicago Oriental Inst. Publications* (hereafter abbreviated *OIP*) xxix, fig. 496 (top row except second from right, second from right in second row), xxx, fig. 107 (apparently d 427, c 2522, d 57, d 37, c 431).

Boğazköy: Bittel and Güterbock, *Boğazköy, Neue Untersuchungen* i, pl. xi. 26.

Kerkenesdağ: Przeworski, *Die Metallindustrie Anatoliens* pl. x. 8*e–f*.

Carchemish: *Carchemish* ii, pl. 22*b* (certain of the examples in lower row).

On the wider distribution of the type and its subsequent development and modification see, e.g., H. Schmidt in Pumpelly, *Explorations in Turkestan* i. 183 ff.; Bulanda, *Bogen und Pfeil bei den Völkern des Altertums* 28, fig. 22; 44 fig. 29; Vulpe, *L'Âge du fer dans les régions thraces de la péninsule balcanique* 65 ff.; Bonnet, *Waffen der Völker des alten Orients* 165, fig. 73, left; Przeworski, op. cit. 61 ff.; H. Lorimer, op. cit. 285 ff., 294–5; Petrie, *Tools and Weapons* 34 ff., especially pl. xli. 55, 60, 61, 73, pl. xlii. 220–4, 226, 239–42; Minns, *Scythians and Greeks* 68, 190, fig. 82 (especially second and third rows except 10, 12, 14, 17, 18, 201). Closer to hand, and so more specifically, one might also mention Petrie, *Naukratis* i, pl. xi. 2; *Gerar*, pl. 29. 14–17, 19; *Tanis* ii, pl. xxxix. 9; *Syria* viii. 208, fig. 15*i*, *j*; *QDAP* ii. 56, fig. 14*c*, pl. xx*c*.

That this variety was already by the sixth century in regular use amongst the vast complex of Scythian peoples there seems little doubt. Petrie (*Tools and Weapons* 34) argues that it first appears in Egypt as a consequence of the great Scythian invasion of Syria in the later seventh century.

It has come to be known, *par excellence*, as the weapon of the Scythians and was also used extensively by the Persian armies.

(*b*) A small socketed variety with a leaf-shaped blade and normally with a single barb projecting from the socket, referred to as 'leaf' below.[121] Although extremely common in Greece and Anatolia, it may reasonably be doubted whether it is native to either; like (*a*) above, it enjoys an Iranian and Scythian distribution.[122]

(*c*) A small socketed variety with four flanges on its blade which is, however, narrower than that of *a* above and usually with a small hole pierced through the side of the socket for

---

But its origins are less clear. In south Russia an example occurs in a seventh-century Taman grave which Rostovtzeff considers Cimmerian (*Iranians and Greeks in South Russia* 40, pl. v. 2). Przeworski (loc. cit.) suggests that it may have arisen in Iran in the eighth century. Its distribution throughout the civilized world seems probably to be associated with the great Scythian migrations (and perhaps those of the Cimmerians also) and whether its appearance in Greece and Anatolia might in any way have anticipated these is possibly doubtful. But the identity (and preference in arrowheads) of the pre-Scythian archers seemingly equipped with composite bows that appear on eighth-century Greek vases remains unknown and, against this background, the certain identification of the early specimen from Smyrna, no. 1 below, becomes an issue of some importance. Further, it seems difficult to dissociate the socketed 'leaf' heads (see below) completely from the socketed 'triangular' ones, especially in the case of the 'triangular' variety equipped with a single side-barb (e.g. *Carchemish* ii, pl. 22*b* and the mould, pl. 23*b*). They are commonly found together and Smyrna (p. 133) offers a rare opportunity of establishing a distinction in their use.

In the absence to date of any other early 'triangular' variety in western Anatolia (although such have been claimed elsewhere, e.g. von Sacken, *Das Grabfeld von Hallstatt*, pl. viii, fig. 10), it seems most likely that the Homeric τριγλώχις alludes to arrowheads of our type and has the meaning of 'three-flanged' rather than of 'three-barbed'. For although early three-barbed 'triangular' heads may perhaps occur earlier farther east (e.g. at Carchemish), there is nothing to suggest their presence in western Anatolia prior to the sixth century. The example from Megalopolis commonly cited to explain the Homeric term (Helbig, *Das homerische Epos aus den Denkmälern erlautet*² 341, fig. 134; Lorimer, op. cit. 285–6, fig. 36) is surely actually of fourth-century B.C. date. It is perfectly paralleled by specimens from Olynthus bearing Philip's name (*Olynthus* x, pl. cxx). Even so, when the archaeological evidence is better documented, it may still be found that the references to three-flanged arrowheads are a factor indicating a low date for parts of the *Iliad*.

Over the sixth century other 'triangular' varieties seem to have become common as well, but that under consideration is still in regular use in contexts of Persian War date in Greece and it is frequent at Persepolis, at least in the earlier stages (Schmidt, *Persepolis* ii, pl. 76). However, the Scythian tombs suggest that it may have suffered an eclipse thereafter. Thus the fifth-century grave, *Prähistorisches Zeitschrift* v. 11 ff., contained only one of our type as against 376 of other 'triangular' varieties.

[121] PLATE 6*d*.

[122] The following comparative material may be cited:

Athens: *ADelt* i. παράρτ. 28, fig. 29–ε, 3, η; *North slope*: *Hesperia* ii. 341, fig. 13 *g* (cf. larger variety, *e* and *f*); iv. 114, fig. 4.

'*Marathon*' (cf. n. 120 above): *British Museum Guide to Greek and Roman Life*² fig. 96 (left, second from top), fig. 102 (first and second from left, top row); Schumacher, *Antike Bronzen, Karlsruhe* 144 no. 748, pl. xiv. 25, 38.

Thermopylae: *AA* 1940, 200, fig. 47.

Olympia: *Olympia* iv. 177, pl. lxiv. 1076, 1078; *Olympische Forschungen* i. 162, pl. 69*e*–*g*.

Delphi: *Fouilles de Delphes* v. 97, fig. 337.

Olynthus: *Olynthus* x. 381, pl. cxx no. 1898.

Lindos: *Lindos* i. 195, nos. 601–3, pl. 23.

Chios: *BSA* xxxv. 151, pl. 32. 11–12.

Magna Graecia: *Atti e Mem. della Società Magna Grecia* 1932, 110, fig. 63.

Naucratis and Tell Defenneh: Petrie, *Naukratis* i, pl. xi. 3–4; *Tanis* ii, pl. xxxix. 16.

Various: Petrie, *Tools and Weapons* pl. xli. 133, 135, 136–7; *Coll. Gréau* 143 (top centre and one to left of it); *BMC Bronzes* 2803–4, 2806–7, 2812–13.

Alişar: *OIP* xxix, fig. 496, centre row, e 1156; xxx, fig. 107 (two at bottom left).

Boğazköy: Bittel and Güterbock, *Boğazköy, Neue Untersuchungen* i, pl. xi. 18–20.

Kerkenesdağ: Przeworski, op. cit. pl. x. 8*a*–*d*.

Kumkale: Przeworski, op. cit. pl. xviii. 3.

Tarsus: *AJA* xli. 278, fig. 33.

Gordion: *Archaeology* vi. 166, fig. 10 (three left-hand ones).

South Russia: Minns, *Scythians and Greeks* 68, 190, fig. 82. 1, 7, 10, 201.

The form of the barb or 'spur', shape of the flanges and socket, and general technique all seem to link this variety with the early 'triangular' one (see above). Its distribution and history seem to have been similar and Petrie (*Tools and Weapons* 34) remarks that its appearance in Egypt seems to follow the same pattern. In Cyrus' attack on Gordion this, rather than the 'triangular' variety, seems to have been the principal weapon of the Persians (*Archaeology* vi. 165–6, *AJA* lxi. 324). In general it is very common in Anatolia, where Przeworski (op. cit. 60 ff.) considers it to have been preceded by an earlier plain leaf type without a barb (cf. Schmidt, *Schliemanns Sammlung trojanischer Altertümer* 260 no. 6538; Bulanda, op. cit. 105, fig. 73*b*; other examples will be found at certain of the references above; cf. also the Iranian specimens, e.g. Bulanda, op. cit. fig. 20, left and right). A leaf variety with a barb consisting in the prolongation of one of the flanges occurs in a seventh-century Taman tomb which Rostovtzeff (op. cit. 40, pl. v. 2) considers Cimmerian.

fastening. It is referred to as 'diamond' below. This is a much rarer type whose origins and associations are obscure, but which, like (*a*) and (*b*) above with which it shows faint affinities, may be foreign.[123]

(*d*) A large and heavy barbed and tanged variety simply referred to as 'barbed and tanged'. Although a parallel form occurs in Anatolia,[124] the Smyrna examples seem to be closer to a Mycenaean variety found in Rhodes[125] and a classical Greek type of wide occurrence represented on Cretan coins.[126] It has been suggested that the greater weight and the tang arise from the use of a reed shaft.[127] Seven examples of this type were found in the temple area at Smyrna in the destruction level, but as it occurs nowhere else in the sack stratum it may be that these represent a quiverful dedicated to the goddess perhaps on some earlier occasion. It should be noted, however, that, though typologically the same, they are by no means identical in size and shape.

Only three bronze arrowheads were found in stratified Iron Age contexts earlier than the sack of the city by Alyattes. They were:

1. Uncertain.[128] Context of about the date of the earthquake.
2. Leaf. Context mainly pre-Wall 2 with some intrusion at the time of building Wall 3.
3. Diamond. Context prior to the building of Temple Platform II. B around the beginning of the last quarter of the seventh century B.C.

The arrowheads found in the probes, admittedly very small, made in the main body of the siege-mound to the north of the city circuit were as follows:

Bronze: Leaf	26	*Iron*: Uncertain type	2
Triangular	4		
Diamond	1		
Uncertain	3		

This must represent fire directed against the mound by the city's defenders. In other words the Ionians must have been using arrowheads almost entirely of 'leaf' type. This seems confirmed by the mound-spill material to the west:

Bronze: Leaf	5	*Iron*: Uncertain type	1
Triangular	nil		
Diamond	1		

---

[123] Cf. *BMC Bronzes* 346 ff., 'Type E'.

[124] e.g. at the later part of the Imperial Hittite period: Bittel and Naumann, *Boğazköy-Ḫattuša* i. 100, fig. 24; Bittel and Güterbock, *Boğazköy, Neue Untersuchungen* i, pl. xi. 24; Garstang, *Prehistoric Mersin* pl. xxxia (top left); H. Koşay, *Alaca Hüyük Kazısı 1937–8* pl. lxxxv, fig. 1 (fourth from left), *OIP* xxix, figs. 290–1 (b 2151 and d 2791, classified, however, as spearheads); Goldman, *Tarsus* ii. 291 nos. 79–85, pl. 427; a development parallel to that of our own seems to occur in Phrygian times; *Belleten* xi, fig. 41, *OIP* xxix, fig. 496 (e 1156, e 2271); Garstang, *Prehistoric Mersin* pl. xxxiia (top row, fourth from right). See further Przeworski, op. cit. 59 ff.

[125] *Ann.* vi–vii. 153, fig. 76; 220, fig. 142. Cf. Blegen, *Prosymna* fig. 461; Petrie, *Tools and Weapons* pl. xli. 94. As well as the Anatolian variety referred to above, these arrowheads relate themselves to a more widespread Aegean type, e.g. Evans, *Prehistoric Tombs at Knossos* fig. 28, Bulanda, op. cit. fig. 48. However, the gap from Mycenaean times until the seventh century B.C. is a vast one (most imperfectly bridged by *Kerameikos* iv. 27, pl. 38) and the possibility of the interplay of further Anatolian influence in the interval cannot be excluded.

[126] Most fully discussed recently, *Proc. Society of Antiquaries* xxxii. 152 ff. This classical variety is distinguished from the archaic one, *inter alia*, by the different treatment of the curious 'haft' above the tang. It is abundantly attested at Olynthus, *Olynthus* x, pls. cxx–cxxii. But earlier examples resembling our *c.* seventh-century specimens from Smyrna have also been found, e.g. *Olympia* iv. 178, pl. lxiv no. 1095; *Olympische Forschungen* i. 160 ff., pl. 69*b*: *FD* v. 97, fig. 336*a*; U. Jantzen, *Griechische Greifenkessel* 58, pl. 64. 1–2 (moulds); *BSA* xxxv. 151, pl. 32. 10 (fragmentary); *OIP* xxx, fig. 107 (c 1130); Schmidt, *Schliemanns Sammlung trojanischer Altertümer* 260, no. 6534; Bulanda, op. cit. 105, fig. 73*a*.

[127] Petrie, *Tools and Weapons* 33 ff.

[128] The inventory description (although it possibly suggests the leaf variety) is quite inadequate and judgement on the identification of this important piece must accordingly be deferred.

It has been suggested[129] that the original siting of the mound some way out from the wall was aimed at affording the Lydian sappers some protection against this deadly fire from the city. In the earlier stages the attacking archers probably played only a limited role, but once the mound had risen to a sufficient height to place them on equal terms with the Ionians mounted on the wall the situation must have changed very markedly. Inside the city in the probe in Kxi directly opposite the mound the figures were as follows for the destruction stratum:

Bronze:	Leaf	4
	Triangular	7
	Uncertain	4

The destruction stratum at this point cannot be fully segregated from the mound-spill that came down immediately on top of it. However, it seems as if the attacking archers firing from the mound were mainly using arrowheads of 'triangular' type but may also have employed a lesser proportion of the 'leaf' variety, although the majority of the latter found in this area have probably washed in with the mound-spill. The arrowheads in the upper levels at Kxi had probably in the main worked up from the sack stratum below or come in with the mound-spill.[130] The figures for these were:

Bronze:	Leaf	6	*Iron*:	Uncertain type	1
	Triangular	8			
	Uncertain	1			

To the east in the main occupation probe the houses lay to one side of the mound and apparently came less directly under fire from it. This large area yielded only a small number of arrowheads of which a higher proportion may have washed in with the mound-spill. Here the total figures for the destruction stratum and subsequent levels were:[131]

Bronze:	Leaf	6	*Iron*:	Uncertain type	1
	Triangular	4			
	Uncertain	1			

Eventually, it is to be presumed, the mound sufficiently overtopped the wall to enable the besieging archers so to dominate the part of the city opposite that their engineers were able to bridge the gap between mound and wall and so open a path into the beleaguered town.[132] Thereafter hand-to-hand fighting probably resulted, in which the bow played a smaller part than thrusting spear and javelin. This seems to be implied by the archaeological evidence also, since, apart from the vicinity of the mound (already considered) and the temple area (to be discussed below), only one arrowhead was found in the excavations inside the city,[133] occurring in the destruction stratum in Jxviii:

Bronze: Triangular 1

Spear-points were much commoner.

It would seem doubtful whether the whole of the great volume of weapons found in the temple area represent votives, although some of them almost certainly do.[134] Here spear-points, both from thrusting spears and javelins, were far more numerous than arrowheads.[135] However, the statistics for the latter were as follows:

---

[129] p. 89.

[130] The possibility that a few of these might be of later, e.g. Persian War, date cannot be excluded on typological grounds but is not supported by the overall excavational evidence.

[131] Again, one or two of those found in later levels could conceivably be later.

[132] p. 91.

[133] A further triangular arrowhead was picked up from the surface of about the middle of the *tell*. It could well have washed down from the north. Neither it nor a further specimen, also triangular, found in the fill of a tumulus of the Lydian period near the north edge of the later cemetery is included in the overall statistics given below.

[134] Cf. p. 131.

Bronze:	Leaf	12	*Iron*: Uncertain type	1
	Triangular	10		
	Barbed and tanged	7		
	Diamond	1		
	Uncertain	2		

All these would seem to have found their way into approximately their present positions at the time of the sack. The almost equal incidence of the 'leaf' and 'triangular' types at this point is perhaps significant. It is noteworthy that the *temenos* area with its massive enclosure walls to the south could readily have been converted into an inner fortress with the aid of a barricade on the west side.[136] It seems an attractive hypothesis that, after the Lydians had carried the walls of the *tell*, the Ionians made a last stand at this point under the protection of the goddess.

Given the limitations of this information already stated at the very outset, the overall statistics for the work of the archers in the siege, as revealed in the areas excavated, are as follows:

Outside the city in the mound:

Bronze:	Leaf	31	*Iron*: Uncertain type	3
	Triangular	4		
	Barbed and tanged	nil		
	Diamond	2		
	Uncertain	3		

Inside the city, including mound-spill and temple votives:

Bronze:	Leaf	28	*Iron*: Uncertain type	3
	Triangular	30		
	Barbed and tanged	7		
	Diamond	1		
	Uncertain	8		

It has been suggested that the barbed and tanged heads may have been used by neither side at the time of the siege.[137] The Ionians were clearly mainly using arrowheads of 'leaf' type.[138] Of the rarer varieties it is more difficult to speak with certainty, but it seems that the Ionians also employed the narrow-socketed bronze heads of diamond section and iron ones of unspecified type. The Lydians seem clearly to have used arrowheads of 'triangular' type. They may also have employed some of the other varieties, but whether and to what extent they did cannot yet adequately be determined from the evidence.

Although the barbed and tanged arrowheads may possibly imply the presence of Cretan bowmen at some date in the seventh century, it seems that in the siege both sides may have been using foreign types of arrows and, possibly with them, foreign auxiliary archers. The distinction, if so, between their nationalities remains for the present an intriguing mystery.

---

[135] An undisturbed area of about 10 square metres in the temple pylon alone yielded some seventy-five examples (p. 24).

[136] It is conceivable that the roof of the pylon may also have been demolished and the cross-wall barring the access-way constructed at this stage (i.e. in that event antedating the rest of the boulder substructures). For it is otherwise (i.e. if this wall be taken to be sixth century with the remaining substructures) difficult to see how the spear-points found lying against its face in the undisturbed sack stratum escaped destruction when it was built. These matters will be debated further in the publication of the temple buildings.

[137] p. 131.

[138] The four triangular arrowheads found in the mound suggest the possibility that they may also have been using a very small number of triangular heads, but do not prove it, since these might equally be unexpended Lydian ammunition or *ricochets*.

7. Subsequent Traces: Wall 3/4, the Forts, Wall 4

After Alyattes had sacked Smyrna the mudbrick superstructure of the fortifications of the *tell* seems gradually to have crumbled away, over much of the circuit completely burying and so protecting the socle beneath it. When the city was reoccupied in the sixth century B.C. no attempt seems to have been made to repair its defence-circuit, whilst young children may in fact have been buried in parts of its debris.[139] Before the end of the sixth century its destruction seems to have been carried further by an earthquake.[140] The great public cult in the temple to the west of the former north-east gate was, perhaps significantly, not renewed in this period. The temple itself seems to have lain desecrate and been used as a stone quarry,[141] whilst a profane building of alien type blocked its pylon.

At about the end of the sixth or very beginning of the fifth century B.C. an abortive start was made on the rebuilding of the fortifications. Only a small stretch of this construction, Wall 3/4, was actually completed in the area to the north of the temple.[142] Indeed, it is not clear how far a complete refortifying of the *tell* was envisaged as opposed to a terracing up simply of the temple area. An equally abortive beginning was also made, not improbably at this time, on the rebuilding of the long-derelict temple. It seems most attractive to associate the sudden inception and abandonment of these enterprises with the events of the Ionian revolt.

The small forts to the north-east and north-west of the city[143] described at length by the Miltners[144] have not yet been discussed in relation to the city's defences. The Miltners reported 'striped sherds' at the upper fort, but such need not necessitate an early date. Our own surface examination of the remains at this point[145] seemed to indicate a date probably no earlier than the late fifth century B.C. The attractive suggestion has been made that this fort represents the stronghold of a local despot. The small scale of the whole complex is as remarkable as the limited number of pastoral retainers apparently represented by the adjoining cottages. The military engineering is almost as clumsy and backward as that of the classical circuit of the *tell*. Admittedly there are tower-like projections at the corners of the east side of the small fortified area to the north and the south of the gate,[146] but the long, wedge-shaped one to the south faced on to the protected side of an enemy assaulting the gate. Presumably it was designed rather to control the small ridge on which it stood and the steep slope beneath it. Only the tiny round tower to the north, whose chief merit seems to be that it is not bonded into the wall behind, could have brought fire to bear on the exposed right flank of an enemy approaching the gate. The date of the lower fort[147] has not been independently established. It probably bears some relation to the upper one, being so situated as to be able to see both it and the city below, and may have served as a signalling station as well as a garrison post. Its north side is better equipped with towers, or rather, square projections in its circuit. A third structure described by the Miltners to the west[148] seems from the published accounts[149] as likely to have played a religious or sepulchral as a military role. The relation in date between the building of the forts and the classical refortifying of the city below cannot be adequately determined without further excavation.

---

[139] pp. 48, 93.

[140] pp. 79, 87. The occupation levels in Kxi and elsewhere suggest the possibility of a further earthquake in the early second quarter of the fourth century B.C. The cracks in the masonry of the fountain-house (p. 63) are probably the product of these and perhaps of other undetected tremors.

[141] pp. 80 f.

[142] p. 81, FIG. 23, PLATE 18 *a*.

[143] pp. 5 ff. (to which the reader is referred for a fuller account and bibliography), 32, PLATE I.

[144] *ÖJh* xxvii *Beiblatt* 130–46.

[145] Marked '4th century fort' on the plan, PLATE I.

[146] FIG. 36. Note also that the rock-cuttings, which are all that survive at this point, suggest the presence of a 'jog' of 'indented-trace' type on the south side of the fort.

[147] p. 5. Marked 'fort' on the plan, PLATE I.

[148] op. cit. 146–9.

[149] It is no longer possible to obtain permission to see it. An idea of the conflicting opinions already held may be gained by comparing the Miltners' account with *ÖJh* xi *Beiblatt* 161, xxi–xxii *Beiblatt* 225, *AM* xvi. 224.

The last of the defences of the old city, Wall 4, was completed in the fourth century B.C. To the north-west it, or an earlier construction still in use when it was built, seems to have enclosed the base of Alyattes' siege-mound with a kind of stone glacis,[150] and to the west it may have linked up with the defences on the hillside opposite the *tell*.[151] It ran on round the north edge of the *tell* a little outside the line of its predecessors[152] and apparently again presented a gate at the north-east corner.[153] It also enclosed the east and south limits of the *tell* some way out from the old Wall 3 line.[154] Its course round the west side of the city can only be conjectured.

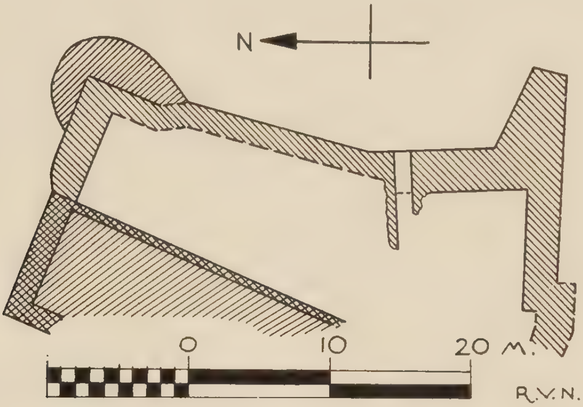


FIG. 36. THE DEFENCES OF THE GATE TO THE CLASSICAL FORT KNOWN AS THE 'ACROPOLIS'

This wall seems to have been a defence line and not just a terrace, but in view of its outmoded concepts[155] and mean construction it can hardly have been a very formidable one. Lying as it does some way out from the occupied top of the *tell* it contains but little relevant dating material, The glacis at the mound was no earlier than the beginning of the fifth century B.C., and may well have been distinctly later.[156] The latest material in the wall-line to the north of the temple was of the late fifth century B.C.[157] and, to the south-east of the circuit, of the early fourth century B.C.[158] The north-east gate is not well dated, but probably also of the fourth century,[159] whilst the apparent wall trace to the west of the *tell* also could not date before the early fourth century B.C.[160] Other indications are more speculative. If the abandonment of the terrace-wall to the north-east of the temple[161] was a prior condition for the building of Wall 4, then the latter is probably no earlier than the second quarter of the fourth century. Further, if the sealing of the fountain-house should pre-date its construction,[162] then the part of it in that area cannot have been built any earlier than the middle of the century.

I have taken it that Prokesch's wall traces on the hillside opposite the *tell*[163] were most likely to be of about the same date. This is a matter that we may possibly never know for sure.

---

[150] pp. 87, 89, 99, 114, PLATES 9, 19 *d*.

[151] pp. 92 f., 128, FIG. 28.

[152] pp. 81, 87, FIGS. 21, 23–24.

[153] pp. 73 ff., FIGS. 18, 20, PLATES 16 *c*, 17 *e*.

[154] pp. 50, 53, 56, 64, 65, 68, FIGS. 2, 7, 8, PLATE 7.

[155] p. 114.

[156] p. 87.

[157] p. 81.

[158] p. 56. Cf. also the burials in Section λ–λ′ (p. 49).

[159] p. 73.

[160] p. 93.

[161] p. 81, FIGS. 21–22, PLATE 18 *b*, *c*.

[162] p. 63.

[163] pp. 36, 92, 128.

Perhaps these fortifications on the hillside constituted a more effectively defended acropolis to the city below. Prokesch assumed a gate at a break in the wall 96 feet from the tower, although one might have expected the gate to have been more directly covered by the tower itself. The plotting of this walled area on the plan of the environs of the city[164] is in part approximation and in part pure guesswork. Prokesch's wall has long since vanished under the expanding modern village, although some large ashlar blocks reputedly from it still survive in the village itself. However, part of a wall in this area that may have run down the hill-side to link Prokesch's wall with the circuit of the *tell* to the east was observed by Conze and Weber in 1898. This may have continued to survive till much later. Possible traces of it were seen and photographed by J. M. Cook early in 1948. These had been removed to make way for a further extension of the modern village before the start of our excavations later that year, but we were able to examine a few ashlar blocks plundered from this area.

In any case the rather mean circuit of the *tell* and possibly with it the defences on the hill-side to the west were not finished until quite late in the classical period, although just how late can less surely be said. However, they were probably standing complete, or as near completion as they ever reached, when Alexander of Macedon passed this way in 334 B.C.[165] They hardly constituted a defence system to check an Alexander and there is little to suggest that they were manned on that occasion, but an iron javelin-point was found at the north-east gate protruding from where it had buried itself between two face-blocks of the Wall 4 tower.[166] Whether it was thrown in battle or in jest must rest obscure.

8. The Fate of the Fortifications after the Abandonment of the City in the Fourth Century B.C.

In the third quarter of the fourth century B.C. the old *tell* was abandoned as the site for a city, perhaps because the populace was transferred at that time to the new foundation of the present city of Smyrna.[167] However, a tiny settlement seems to have persisted on the edge of the ever-receding sea-shore to the west of the *tell*.[168] In early Hellenistic times its presence is only signalled by a few coins found on the surface of the *tell*, by a double sarcophagus burial made on the *tell* itself, and by a few other graves in the old cemetery area on the hillside to the north of the *tell*.[169] In late Hellenistic times it impinged at one point on the west edge of the old city.[170] However, it was not until the early Imperial Roman period that this village saw a notable extension. It then spread round the north-west and south-west corners of the erstwhile classical city,[171] and quite possibly may have extended right along its unexplored west side. Where this settlement impinged heavily on the old city, Wall 4 was plundered extensively for building-blocks. A similar fate may have attended the more southerly parts of Prokesch's wall[172] on the hillside to the west of the *tell*. However, the parts of these fortifications more remote from the main settlement area may have fared much better, even in the face of scattered occupation.[173]

---

[164] PLATE I. The solution suggested there involves the assumption that the fourth-century wall in Kv–viii ran straight up the hill-side to the point from which the ashlar blocks were plundered in 1948: it also involves the assumption that the surviving face of this wall is an outer one, although its weight and finish seemed better suited to an inner face. An alternative seems to be to regard *tell* and hillside as being linked by two parallel walls no great distance apart, of which that in Kv–viii is the more southerly. The single huge face-block in Hi–ii might then almost be in position and represent all that survives of the more northerly wall. Of the two theories, the distribution of surface pottery perhaps favours the first.

[165] p. 34.

[166] At FIG. 18, *i*.

[167] p. 34.

[168] p. 11 n.2

[169] The sarcophagus burial was at Nxiv (p. 31). It could not be determined whether the 'burial' at FIG. 24, *y* (p. 87) was of this period or later.

[170] p. 93.

[171] pp. 64, 65, 93.

[172] pp. 36, 92, 128, 135.

[173] As at FIG. 18, *j* (p. 74).

When Prokesch von Osten and Louis Fauvel visited the site in 1825 part of the wall on the hillside to the west of the *tell* still survived.[174] Further, Prokesch reports that the circuit of the *tell* was Cyclopean and that they were able to follow its line round the occupation mound. This sorts ill with the situation obtaining today. We have found that to the south Wall 3 had been plundered in the sixth and fourth centuries B.C.[175] and that elsewhere, where it had not itself collapsed in the sixth-century earthquake,[176] its socle had been buried under the debris of its own superstructure that had also come down in the sixth century B.C. Only at two points to the south-east of the city[177] was its stonework visible at all.[178] It thus seems highly probable that what Prokesch saw round the *tell* was not Wall 3 but such of the Wall 4 circuit as had been preserved from plundering in Roman times still surviving above ground. It has since been swept away everywhere to below ground-level. Some of the stones from it seem to have gone into the modern terraces around the *tell*.[179] It seems also to have contributed building material to the modern village, certainly in the case of the wall stretch on the hillside opposite the *tell*.

The more recent history of the circuit walls of the *tell* consists in the story of their subsequent exploration which forms the subject of this article.

R. V. NICHOLLS

ADDENDA

p. 105 n. 109: An ell of 0·524 m. has been arrived at by inductive metrology at the Samian Heraion (Reuther, *Heratempel von Samos* 57 ff.). This accords well with the Egyptian measure of *c.* 0·523 m. (*JEA* iv. 135 ff., 149 ff.) and it is, I have been assured by Mr. H. S. Smith, this longer unit (the 'royal' or 'divine ell') that would, by the date at which Herodotus was writing, most naturally have been understood in Egypt by the use of the word 'ell' not otherwise qualified. But the Samian unit has the disadvantage that, because the Egyptian measure of four palms is slightly, but distinctly, longer than the Greek 'short foot', it necessitates the introduction of yet another set of smaller units of measure. The long Egyptian unit seems simply to be a measure of 7 palms instead of 6 (cf. E. Iversen, *Canon and Proportions in Egyptian Art* 22 ff. for a recent discussion; on the short ell, 19 ff.) and, in the case of the Oxford relief at least, one may perhaps be excused for wondering whether there may not be some relationship between the Greek 'short foot' shown on it and the longer unit—i.e. whether we may not be dealing with an ell of 0·516 m. ($0{\cdot}295 \times \frac{7}{4}$) and a fathom of 2·065 m. ($0{\cdot}51625 \times 4$ or $0{\cdot}295 \times 7$). This surmise seems to be strengthened by recent work at the Ashmolean Museum where the modern restoration has been removed and where, so Mr. John Boardman informs me, a calculation on the basis of the strict symmetry of the relief suggests a length of *c.* 2·07 m. for the complete fathom. Incidentally, an ell of $1\frac{3}{4}$ 'short feet' would well fit the evidence at Old Smyrna and elsewhere.

p. 108 n. 140: In *Minoica, Festschrift zum 80. Geburtstag von Johannes Sundwall* 396 ff. Sulze adduces instances of timber revetting associated with the Mycenaean fortifications at Tiryns. However, as he admits himself, the evidence is confined to inside the walls, where instances occasionally occur of the building procedures usual in civil structures, e.g. in a gallery at Tiryns (Sulze, op. cit., pl. 3*a*) and in the ramp wall at Mycenae (*BSA* xxv. 67 pl. 16*a*; Wace, *Mycenae* 55 pl. 24*b*).

p. 117 n. 233: In *Minoica, Festschrift Sundwall* 397 Sulze reiterates the view that tall superstructures in perishable materials went above Mycenaean fortification walls. The main evidence for this at Tiryns is probably the mudbrick debris found inside a tower (Dörpfeld in Schliemann, *Tiryns* 317; *Tiryns* iii. 74)—although, while this remains an isolated phenomenon, it is perhaps wiser to be cautious about defining its source. However, this judgement of an elder worker in the field is of great interest. As we have seen, the negative aspect (that Mycenaean stone battlements have yet to be identified) seems to favour it.

---

[174] p. 36.

[175] pp. 53, 55 f., 65.

[176] pp. 79, 87, 134.

[177] p. 38 n. 18.

[178] A small part of Wall 1 also showed above ground at the north-east gate, but this was probably first uncovered by the modern terracing of the *tell*.

[179] Cf. p. 74 n. 176.

OLD SMYRNA: THE CORINTHIAN POTTERY

(PLATES 21–30)

THE following catalogue[1] is divided into groups according to stratification. Brief descriptions of each piece and reference to similar vases from other sites are given in the catalogue. The chronological significance of the vases from the destruction level is discussed at the end of Section **H.**

A. *Occupation Phase before the Curved Buildings*

1. PLATE 21. Fragment of rim of large krater.

Diameter about 0·30.

Very pale clay; dark-brown glaze; on the rim groups of short vertical lines; on the shoulder, panel containing hatched maeander; inside, rather streaky glaze varying from dark to light brown.

Weinberg[2] holds that this type of krater developed during the Late Geometric period, but the term 'Late Geometric', as applied to Corinthian pottery, wants further definition.[3] This piece must belong to the first half of the eighth century.

Both high- and low-footed examples are found.[4]

Context: Trench H (PLATE 74, Squares E–Gxi–xiii), Room XLI between floors at 8·90–8·40.

B. *Phase immediately preceding the Curved Buildings*

2. PLATE 21. Fragment of lip of large cup, showing spring of handle.

Diameter uncertain.

Brown clay; black glaze; two horizontal lines on outside of lip; short vertical line on handle; handle zone reserved, with narrow vertical lines; inside black.

Profile like *Corinth* fig. 8 (no. 80). Rather earlier than the earliest kotylai. (Cf. Payne, *Perachora* i. 56.)

Context: Trench H, under Room XLa. 9·00–8·70.

3. PLATE 21. Fragment of neck of oinochoe.

Light-brown clay; clear chocolate-brown glaze; narrow horizontal lines; at the top of the fragment (round the middle of the neck) a wider reserved band filled with vertical strokes.

Context: Trench H, under Yc2. 8·90–8·80.

4. PLATE 21. Fragment of shoulder and lower part of neck of oinochoe.

Similar fabric; narrow horizontal lines; round the shoulder a zone filled with wavy vertical lines.

Context: Trench H, under Room XLII.

5. PLATE 21. Probably from the neck of an oinochoe.

Similar fabric.

All these are perhaps from the same vase. They are roughly contemporary with the kotyle fragment no. **9**, on the evidence of the group *Corinth* nos. 108–15. Compare the oinochoai discussed by Weinberg in *AJA* xlv. 34–35.

6. PLATE 21. Probably from the body of a small oinochoe.

Fine fabric; light-brown clay; clear dark-brown glaze; thin closely set horizontal lines.

Context: Trench H, Room XLV. 8·50–8·40.

C. *Building Phase of Curved Buildings*

7. PLATE 21. Fragment of body of black kotyle.

Light-brown clay; fine fabric; almost certainly Corinthian. Good glossy black glaze inside and out; two narrow reserved horizontal bands on outside.

Context: Upper fill of Tholos Yj.

8. PLATE 21. Fragment of lip of black kotyle.

Fine fabric; greenish clay; black glaze inside and out; painted white line below rim on outside.

Context: Below earlier level in Room XXXVIII.

---

[1] The original manuscript of this paper was revised and greatly improved by the late Mr. T. J. Dunbabin. He either made or confirmed all the alterations to particular painters. He also added references to *Perachora* ii. Since Dec. 1952 I have been unable to consult most of the relevant literature, or to seek the guidance of those more learned than myself. I have therefore made as few alterations as possible to the text of which Dunbabin approved.

Mr. J. M. Cook gave me much valuable help and advice while I was working on the material in Smyrna Museum, and has since then sent to me photographs and drawings of pieces which I was unable to examine myself. Of these the most important is the oinochoe, no. **33**.

Dr. R. J. Hopper examined photographs of the material and made a number of valuable suggestions.

The drawings are the work of Mrs. G. U. S. Corbett.

[2] *Corinth* viii. i. 25–26 (this work is hereafter referred to as *Corinth*). Our piece is perhaps rather later than *Corinth* no. 73. Cf. also the group classed by Miss Benton as 'Middle Geometric' (*BSA* xlviii. 296, nos. 787–91).

[3] Cf. *JHS* lxviii. 68.

[4] *VS* pl. 1, nos. 1, 2. Shear, 'Excavations in Corinth in 1930' (*AJA* xxxiv. 403 ff., figs. 6–7).

9. PLATE 21. Fragment of lip of kotyle.

Light-brown clay; dark-brown glaze inside and out; chevrons. Payne[5] established the early date of kotylai with this sort of decoration. His conclusions have been confirmed in Ithaca[6] and now here at Smyrna. I do not know any published kotylai of this type from the Western Colonies. Dunbabin told me of one unpublished example from Ischia, where the Greek settlement was said to be older than those in Sicily.[7] *Corinth* nos. 108–10 are examples from Corinth itself. The evidence from Ithaca and Perachora[8] suggests that these kotylai were introduced before the earliest globular aryballoi. The earliest aryballoi from Syracuse[9] are not directly associated with any kotylai, but are probably roughly contemporary with pieces like *VS* pl. ix, no. 7 (*Mon Ant* xxii, pl. 50. 1). Our no. **9** should therefore have been made in the generation before the first colonization of Sicily.

10. PLATE 26. Kotyle-pyxis.

Height 5·5 cm.

Restored from fragments. Greater part of rim and much of body missing. Fine light-brown clay; outside of foot and lower part of body covered with clear red-brown glaze; above this are fine horizontal lines, except round the widest part of the body, just below the rim, where there is a narrow zone filled with groups of short thick vertical lines, alternating with groups of three-stroke SS. Inside reserved.

Similar vases were found at Aetos in Ithaca, three out of five published by Robertson[10] being from the lower deposit. This evidence, combined with that from Smyrna, shows that the first vases of this shape were contemporary with kotylai like our no. **9.**

Context: Joining fragments from under Room XXXVIII and from the walls of the little room next door.

11. PLATE 21. Fragment of neck of oinochoe.

Light-brown clay; worn black glaze; narrow horizontal lines; round the middle of the neck a narrow zone filled with groups of straight and wavy vertical lines. From the back of the neck, behind the handle, as is shown by the gap where the horizontal lines fail to meet.

Context: Wall of one of the curved buildings.

12. PLATE 21. Fragment of kotyle rim and handle.

Diameter about 0·12.

Light-brown clay; dark-brown glaze; bars on handle.

Contemporary with our no. **9** (cf. Miss Benton, op. cit. 279, on the decoration of kotyle handles).

D. *Abandonment of the North-west Corner Buildings*[11]

13. PLATE 21. Fragment of rim of large kotyle.

Light-brown clay; good dark-brown glaze inside and out; in the handle zone, fine vertical lines and 'double axe'; below, fine horizontal lines.

14. PLATE 21. Fragment of rim of large kotyle (probably the same vase as no. **13**). Similar fabric. In the handle some fine vertical lines and a water-bird with a long crest and a hatched body.

15. PLATE 21. Fragment of a similar kotyle.

Long-crested water-bird in the handle zone.

These fragments came from large kotylai,[12] though the original dimensions of the vases are uncertain. Smaller kotylai with water-birds are more common.[13] The usual pattern is for the birds to face one another across a panel filled with horizontal wavy lines, representing water. This scheme is also found on the necks of oinochoai.[14] The birds are usually drawn in silhouette; ours with bodies drawn in outline and hatched[15] are early—perhaps about 730 B.C. Water-birds seem to belong to the generation in which the earliest Sicilian colonies were founded.[16] There were none in the Limenia deposit at Perachora, which began to accumulate about 750–725 B.C.

E. *Abandonment of the remaining Curved Buildings*

Good evidence for the date at which the rest of the apsidal buildings were abandoned is provided by the numerous fragments of smashed kotylai found on the floors. Examples are illustrated in PLATES 21 and 22. Those in PLATE 21 are from a group which must originally have included at least twenty kotylai, but all were too smashed for reconstruction. All are of fine fabric, with typical light-brown clay.

---

[5] *Perachora* i. 59.

[6] Robertson in *BSA* xliii. 54, no. 20 (from the lower deposit); Miss Benton, *BSA* xlviii. 279. Her no. 666 (pl. 42) closely resembles our no. **9.**

[7] Cf. Miss Benton, op. cit. 279 n. 165.

[8] *Perachora* ii, nos. 449–51, from the Geometric deposit, from which aryballoi are lacking.

[9] e.g. *NS* 1895, 137, fig. 14, 138, fig. 15, 151, fig. 37 (= *VS* pl. 4. 3).

[10] Op. cit. 27 and pl. 5, no. 75. Rather later pieces from Ithaca are published by Miss Benton (op. cit. 301–2, nos. 842–50; 'cup pyxides'). Weinberg (*Corinth* no. 120 and *Hesperia* xvii. 211, C. 9) gives some examples from Corinth, also rather later than ours.

[11] The pieces in this group are from the floors of the curved buildings in the north-west part of Trench H, which appear to have gone out of use rather earlier than the others.

[12] Cf. Robertson, op. cit. no. 298 (Ithacan copy of Corinthian).

[13] e.g. Robertson, op. cit. nos. 22–23 (from the lower deposit at Aetos), and *VS* pl. 10. 1, from Anavysos.

[14] *VS* pl. 6. 1; *Mon Ant* xxii, pl. 30*a–c* (from Cumae); *Hesperia* xviii, pl. 19. 26, *r*.

[15] Cf. Robertson, op. cit. no. 246.

[16] *Mon Ant* xxv. 554, fig. 140 (*BSA* xlii. 152, fig. 7*b*), a fragment of a kyathos with herons from Syracuse. (To the above references add now Miss Benton's discussion of kotylai, op. cit. 279.)

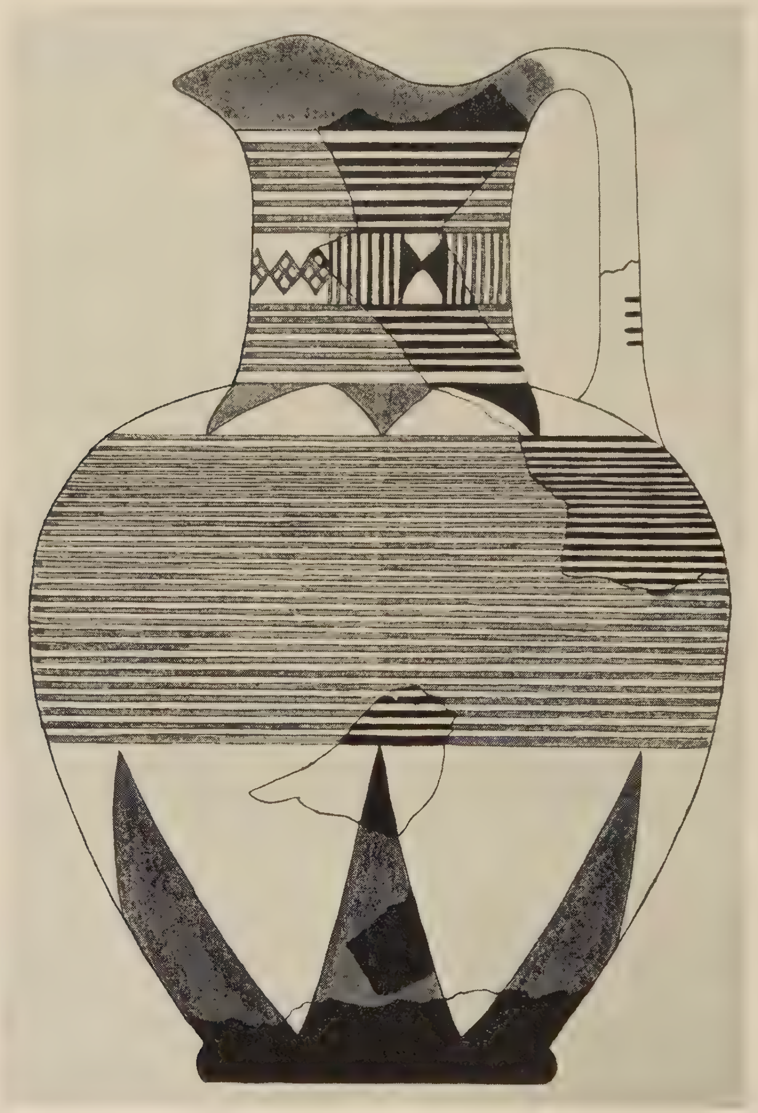


FIG. 1. FRAGMENTS OF OINOCHOE. No. **33** (1:2)

16. PLATE 21. Fragment of rim and body.
Black glaze; widely spaced rays at base; above, fine horizontal lines; in handle zone, fine vertical lines; inside black.

17–19. PLATE 21. Fragments of rims.
Black glaze; in handle zone, central panel filled with rows of birds and bounded by fine vertical lines; below, fine horizontal lines; inside black with narrow reserved band below rim.

20. PLATE 21. Handle.
Black glaze; fine horizontal lines.

21–22. PLATE 21. Fragments of rims.

Undulating lines of the type usually found with water-birds. Johansen[17] knew of no example of undulating lines without birds. But there do not seem to be any birds on *Perachora* i, pl. 12. 2 (though there may have been before it was broken). Payne[18] says that this piece belongs to 'the transition from geometric to orientalizing'. It is a low, broad kotyle and looks distinctly earlier than vases like *Corinth* no. 123, with whose decoration the birds on our nos. **17–19** may be compared. Birds of this type flourished about a generation later than the water-birds of our nos. **14–15.** The process of development is illustrated by a group of vases lished by J. M. Cook.[19]

23. PLATE 21. Two fragments from the same kotyle, showing the scheme of decoration from top to bottom.

Below, solid red glaze with a narrow reserved line; above, fine horizontal lines; in the handle zone a central panel containing a row of stiff birds ('birds on parade');[20] inside, red with a narrow reserved line just below the rim.

24. PLATE 21. Fragments of body.

Below, solid red glaze with one reserved line; above, horizontal lines.

25–32. PLATE 21. Fragments showing various rim patterns.

No. **16** is the only one of these pieces with rays at the foot. Rays replace solid glaze about the time of the introduction of ovoid aryballoi.[21] At the same time the subgeometric decoration of the handle zone, while remaining neat, often becomes weak and niggling, like that of our nos. **25–30.**[22]

Naturally there is no reason to suppose that all the pieces found together were made at exactly the same time. Nos. **21–3** are probably the earliest, **16** and **25–32** the latest, the period of manufacture being spread over rather less than a generation, ending probably about 700 B.C.[23]

33. FIG. 1. Fragments of a large oinochoe.

Restored height about 25 cm.

(*a*) Base with rays, and other fragments from which the height of the rays can be calculated.

(*b*) Joining fragments of shoulder, including spring of handle, and neck, from which the original appearance of the whole vase can be restored with a fair approach to certainty. Round the body, fine horizontal lines; round the top of the shoulder, broad rays; round the middle of the neck a zone containing a 'double axe' between fine vertical lines, and, in a panel in front, cross-hatched diamonds (?). On the handle horizontal bars. Light-red clay; red glaze.

The restoration, by Mrs. Corbett, is due to Mr. J. M. Cook, who kindly informed me of the existence of these fragments, which I have not myself seen.

F. *Other Fragments from the Floors of the Curved Buildings*

These pieces, though from contexts stratigraphically similar to that of Group **E**, have been kept separate for the sake of greater precision.

34–41. PLATE 22. Fragments of rims of kotylai.

For the double axes on nos. **34** and **36**, cf. *VS* pl. 9, 3 and 7.

No. **39** is perhaps the earliest; this pattern is found on the neck of an oinochoe from Cumae, and together with birds on pieces from Corinth and Perachora.[24] There is a serpent like that on no. **40** on a kotyle in the Vlasto collection[25] whose low, wide shape and handle-decoration are like those of kotylai with water-birds. But the fragment illustrated in *Argive Heraeum* ii, pl. 66. 4 does not look so early, and our piece almost certainly belongs to the group with which it was found.[26]

42. PLATE 23. Foot and part of body of kotyle, giving complete profile.

Height 0·08.

Light-brown clay; glaze a dark chestnut colour. For the decoration compare *VS* 77, fig. 47 (which has rather narrower rays).

43–48. PLATE 22. Fragments of kotylai.

Fine fabric; light-brown clay. White paint decoration over red glaze. Nos. **43–44** have reserved 'hour-glasses' framed by white painted lines.[27] Nos. **45–46** have small concentric circles in white paint. Similar pieces are known from Perachora, Anavysos, and Eleusis,[28] those from Anavysos being associated with Attic Late Geometric pottery.

The fine fabric and colour of our fragments connect them with the vases from Thera published in *AM* 1903, 152, C. 79–85 (*VS* 69 n. 10). I believe the whole group to be Corinthian. No. **47** is unusual in both shape and decoration. Fabric and glaze like nos. **43–44**; lip slightly turned out;

---

[17] *VS* 48.

[18] Op. cit. 51. Dunbabin adds *Perachora* ii, no. 471, with similar decoration in added red.

[19] *BSA* xlii. 147, fig. 6*a*; a group of four birds of the later type with undulating lines on either side; this piece was found together with a kotyle with two water-birds and an Attic kotyle by the Lion Painter.

[20] Cf. Miss Benton, op. cit. no. 681.

[21] *VS* 77. The combination of rays and birds (*VS* pl. 17. 1) is very unusual.

[22] Cf. *VS* pl. 17. But the decoration is of less importance than the increased height and slenderness of the vase, which our pieces are too fragmentary to illustrate.

[23] For the absolute chronology see *VS* 179–85, especially 183, and Cook, op. cit. 151 ff.

[24] *VS* pl. 6. 16. Stillwell, *AJA* xxxvii. 607, fig. 3. *Perachora* ii, nos. 452–5.

[25] *AJA* xliv, pl. 28. 1.

[26] Cf. now Miss Benton, op. cit. no. 685. A serpent-kotyle of the later tall, slender shape from Tarquinii is published in *Mon Ant* xxii. 149, but in Dunbabin's opinion is probably Italian.

[27] Cf. *VS* pl. 9, 1 and 2. *Corinth* no. 128. *Hesperia* xviii, pl. 20. 29.

[28] *Perachora* i, pl. 13. 13. *PAE* 1911, fig. 16. *VS* 69 n. 9.

below the lip a purple band between two narrow white lines. Such polychrome decoration is exceedingly rare, if not unparalleled, at the early date to which this piece must, on account of its context, be assigned.

49–53. PLATE 22. Fragments of kotylai.

White paint on black glaze. No. **50** has a reserved 'hour-glass' like nos. **42–43**.

The fragments found seem to come from rather more than a dozen kotylai, the black slightly outnumbering the red. But no exact estimate is possible.

54–57. PLATE 22. Fragments of kotylai.

Besides the undoubtedly Corinthian pieces listed above there are a number of fragments whose clumsier fabric, coarse dark-brown clay, inferior glaze, and more careless painting mark them as imitations, perhaps made at or near Smyrna. All have solid black glaze inside and out, with white painted patterns in the handle zone. The 'hour-glass' on no. **56** is reserved.

58. PLATE 23. Fragment of kotyle.

A later piece of the same fabric,[29] a casual find from Trench H. Rays at the foot; reserved 'hour-glass' framed with fine white lines in the handle zone.

Black or red kotylai with white painted decoration go back to the time when the shape was first introduced[30] and develop along the same lines as those with Subgeometric decoration.

Not many Early Protocorinthian vases of other shapes were found. The following are from the same stratum as nos. **34–57**.

59. PLATE 22. Fragment of krater rim, with upper part of stirrup handle.

Light-greenish clay; black glaze.

'False spirals' like that running round the rim are known from Delphi, Ithaca, Perachora, and Aigina,[31] but not as yet from Corinth.[32] But the fabric of this piece certainly looks Corinthian.

60. PLATE 22. Fragment of rim of cup.

Late Geometric; cf. *Corinth* no. 75. Considerably earlier than the other pieces from this stratum.

61. PLATE 22. Fragment of small trefoil-mouthed oinochoe.

Light-greenish clay; worn black glaze.

62. PLATE 22. Three fragments from the lip and neck of a trefoil-mouthed oinochoe.

Light-brown clay; dark-chestnut glaze; reversed *sigmas* in white paint below the lip and on a broad band round the middle of the neck.

63. PLATE 22. Fragment of cup.

Diameter about 0·12.

Light-brown clay; dark-brown glaze.

64. PLATE 22. Fragment of cup.

Diameter about 0·12.

Similar.

For the form and decoration of nos. **63–64** cf. *VS* pl. 9. 4, from Phaleron. Further examples are listed by Weinberg.[33] The shape continues, with slight modifications, until the Early Corinthian period.[34] A bronze cup of very similar form from Syracuse is illustrated in *NS* 1895, 181, fig. 82.

65. PLATE 22. Four fragments of a kyathos.

Light-brown clay; glaze dark brown below, light brown above. A late example of a shape which Payne supposed to have been introduced to Corinth about 750 B.C. and to have disappeared early in the seventh century.[35]

66. PLATE 22. Two fragments of a small over-fitting lid.

67. PLATE 22. Fragment of a small conical oinochoe.[36]

68. PLATE 22. Similar.

69. PLATE 22. Two fragments of small kotylai with rays at the foot and fine horizontal lines above.

These fragments from the Great Mound (Trench D) are certainly later than nos. **34–41**, and much earlier than the destruction of the city by Alyattes.

No other Corinthian pottery of the first half of the seventh century B.C. was found.

G. *Under the Temple Platform*

A few sherds found under the foundation of the inner temple platform help to fix the date at which it was built.

70. PLATE 29. Fragment of a small alabastron.

Light-brown clay, glaze much worn. Forefeet of lion or sphinx, and tail of bird (?). Details incised. Transitional. (Cf. *NC* pl. 15. 3.)

Context: Under the south-west corner of the inner temple platform.

71. PLATE 23. Part of the body of a large piriform aryballos. Round the body, two broad dark-brown bands; on the shoulder and between the broad bands, dot rosettes alternating with Ss.

Almost identical aryballoi have been found at Corinth and at Delos.[37]

---

[29] I have not myself seen this piece. Mr. J. M. Cook informs me that its fabric and glaze resemble those of the other imitations. For a similar Corinthian kotyle, dated by its context to the first half of the seventh century, see Young, *Hesperia Supplement* ii, fig. 100, C. 16. Cf. also an early seventh-century example from Corinth, *Hesperia* xviii, pl. 20. 29.

[30] Besides our nos. **7** and **8**, note *Corinth* nos. 112–15, found with nos. 108–10 (already compared with our no. **9**). For examples from Corinth which must be contemporary with our nos. **48–52** cf. *Hesperia* xviii, pl. 20. 20. Late Protocorinthian and Transitional kotylai with polychrome decoration, like our no. **47**, were found at Perachora (*Perachora* ii, nos. 590, 592).

[31] *VS* 8 and fig. 4. Robertson, op. cit. no. 59. *Perachora* i, pl. 123, 4, on the body of a large conical oinochoe. Kraiker, *Aigina: die Vasen d. 10. bis 7. Jahrhunderts*, pl. 8, no. 121.

[32] Weinberg, *AJA* xlv. 30 ff.

[33] *Corinth* 46 (no. 157).

[34] Cf. *Corinth* nos. 212–13.

[35] *Perachora* i. 59–60.

[36] This shape is discussed in *VS* 21 ff.

[37] *Corinth* no. 143. *Delos* x, pl. 21, nos. 143, 145.

The Destruction Level

The pottery from the ruins of the buildings sacked by King Alyattes forms one large and consistent group, but it will be convenient to divide it into three smaller sections, the first including those vases which were found inside the temple, the second the vases from the layer of white chips surrounding the temple, and the third from the houses in other parts of the site.

H(1). *From Inside the Temple*

72. PLATE 23. Miniature kotyle.
Height 0·045.

Restored from fragments; a few lost. Light-brown clay; dark-brown glaze; rays at foot; above, frieze with three hounds in silhouette style between two narrow bounding lines above and below; in the handle zone groups of wavy vertical lines; inside brown.

73. PLATE 23. Similar.

74. PLATE 23. Fragment of miniature kotyle.

Similar, but with two narrow horizontal lines round the lower part of the body instead of rays.

Cf. Hopper, *BSA* xliv. 185. Payne notes kotylai of this type from Selinus[38] and 'a single debased example' from Naucratis.[39] Cf. also *Corinth* nos. 184, 249.

75. PLATE 24. Small pointed aryballos.
Height 0·07.

Complete except for part of lip. Light-brown clay; brown glaze; two hounds in subgeometric silhouette style on the shoulder; fine horizontal lines round the widest part of the body; broad horizontal lines below; two concentric lines round mouth.

76. PLATE 24. Small pointed aryballos.
Height 0·075.

Most of lip broken. Similar to no. 75 but with three dot rosettes instead of hounds on the shoulder.

77. Not illustrated. Small pointed aryballos.

Similar. Neck and mouth lost.

All late Protocorinthian, but in too rough a style to be closely dated.

78. PLATE 23. Kothon on high foot.
Height 0·115. Diameter 0·23.

Restored from fragments, the handle and much of the lip and body lost. Light-brown clay; dull black glaze. The foot is widely splayed, with a thickened edge. The upper surface of the pedestal is divided into tongues by double incised lines. Above this is a short stem, round which runs a raised rib. Above and below the rib are narrow polychrome bands (purple between two white).

The body of the vase rests upon a thin flat disk. The lower part is black, with two polychrome bands. Round the upper part is an animal frieze, which has been so badly broken that the bull shown in the middle of PLATE 23 is the only animal completely preserved. The arrangement was probably (starting from the handle) bird to left, lion to left, stag to left, lion to left, bull to left, lion to left, bull to right. The only filling ornament is a few dot-and-circle rosettes. Anatomical details are incised but no added colour is used on the animals. The style is firm and vigorous though not particularly fine.

Of the handle only the beginning of the spring is preserved. I have restored a not very convincing double reflex handle. Knucklebone handles are impossible, as there is not room for more than one, and in any case the vase was clearly meant to stand, not to be suspended.

The lip is divided into tongues by double incised lines.

The style of the animal frieze on this vase belongs to the transitional period and the piece is therefore one of the earliest kothons known.[40] Kothons on stands are extremely rare[41] and this may be an early experimental model. Kothons were later manufactured in great numbers at Corinth, and widely exported, though the shape was not often copied by foreign potters. Almost all the examples whose provenance is known to me come from graves or temples, and it seems likely that they had some religious use.[42] Our vase certainly formed part of the temple furniture. The fragments are said to have smelled strongly of vanilla when first discovered, and probably the vessel held some sort of liquid perfume, though whether it was used in ritual or merely scented the air must remain doubtful. Mr. Cook points out that the glaze round the top of the rim is more worn than elsewhere on the vase and suggests that it may have been rubbed by people dipping their fingers into the liquid inside. But the vases found in graves and those where pierced knucklebone handles show that they were designed to be suspended from strings can hardly have been holy-water stoups. Of course, there is no reason to suppose that all kothons were put to exactly the same use. The only certain assumption is that all contained some liquid which was not to be drunk or spilled—in fact that the shape which the ancients called 'kothon' was something else.

---

[38] *NC* 23 and fig. 9*c*.

[39] *NC* no. 191 (p. 279).

[40] Cf. *NC* 297–8; Hopper op. cit. 231 f. Dunbabin believed this to be the earliest Corinthian kothon, with the possible exception of one in a German private collection (Neugebauer, *Antiken in deutschem Privatbesitz* pl. 61, 147, on which see Hopper, loc. cit.).

[41] Late Corinthian examples: *AA* 1936, 363*f*, figs. 17–19; also *BSA* xiv. 274 (from Rhitsona).

[42] Burrows and Ure (*JHS* xxxi. 72 ff.) have proved that kothons can be used as lamps with a floating wick. But that they were in fact so used seems very doubtful.

One nearly complete kothon and several fragments were found at Corinth in a well (Campbell, *Hesperia* vii. 594, nos. 135–8), but this does not provide a clue to their purpose as they had evidently been thrown away.

H(2). *The White Chip Layer*

79. PLATE 23. Fragment of kotyle.

Light-brown clay; dark-brown glaze inside and out; animal frieze (feet and part of body of lion to right) in silhouette style without incision; filling ornament blob rosettes; below, three fine lines and the tops of rays. The advancing rear leg of the lion has been broken by the chipping of the sherd.

Early Corinthian. For the absence of incision and added colour cf. Corinth no. 256, which may be rather later.

Context: Found together with nos. **80–85** on top of the raised enclosure to the west of the entrance pylon of the temple.

80. PLATE 23. Small alabastron.

Height 0·075.

Black tongues on mouth, neck, and foot; animal frieze between double bounding lines; on the front of the vase two confronted sphinxes wearing poloi; under the handle a sitting lion; details incised; added red on the wings and hair of the sphinxes; filling ornament polychrome dot rosettes.

Late Transitional.

This piece was unfortunately not available for full study.

81. PLATE 24. Alabastron.

Height 0·095.

Complete except for broken lip. Light-brown clay; black glaze; tongues on mouth, base, and neck; dots round rim; two owls, drawn in a singularly awkward style; interior details incised; filling ornament incised blobs.

82. PLATE 24. Alabastron.

Height 0·10.

Complete. Light-brown clay; black glaze; tongues on mouth, base, and neck; dots round rim; lotus between two geese. The birds are standing confronted, with folded wings; below them is a single narrow bounding line. Interior details and contours incised; filling ornament incised rosettes.

Both these pieces are Early Corinthian, but their grotesque style does not allow them to be closely dated.

83. PLATE 24. Alabastron.

Height 0·095.

Subgeometric decoration like *NC* fig. 121 *bis* (p. 284), except that there are no tongues on the bottom.

Early Corinthian. Payne mentions similar pieces from Syracuse, Megara Hyblaea, and Rhitsona.

84. PLATE 24. Piriform aryballos.

Height 0·10.

Black tongues on mouth, shoulder, and foot; incised scale pattern round body.

Similar aryballoi are fairly common in Early Corinthian contexts. They have been found at Selinus.[43]

85. Not illustrated. Round aryballos.

Height 0·06.

Complete. Light-grey clay; glaze very badly worn; quadruple lotus like *NC* 147, fig. 54*c*.

The following pieces came from other parts of the white chip layer.

86. PLATE 24. Alabastron.

Height 0·07.

Complete except for part of lip. Light-brown clay; protome of goat in profile to left; interior details incised; no added colour; no subsidiary ornament.

Transitional. The form of the vase, with its short body, wide neck, and narrow flat lip is different both from the normal Early Corinthian shape (cf. our nos. **81–82**) and from the normal Late Protocorinthian.[44]

87. PLATES 24, 25. Alabastron.

Height 0·08.

Complete. Light-brown clay; black glaze, worn in front; tongues on lip, base, and neck; dots round rim; two confronted lions, with tails interlaced at the back of the vase.

Incision is used in a firm but heavy manner, which takes no account of the anatomy of real living animals (cf. the cross-hatched manes, tails cut into sections, and the foreleg of the lion in PLATE 24). Between the lions in front are two incised rosettes; at the back, three polychrome dot rosettes in the loops of the tails and in the space between the lions' rumps.

Early in the Early Corinthian period.

This vase is by the Dolphin Painter[45]—'perhaps his masterpiece' in Dunbabin's opinion. He has surpassed himself especially in the pattern formed by the hind legs and interlacing tails; compare two alabastra in the Louvre in which the composition is overloaded with no fewer than six dot rosettes.[46]

---

[43] *NC* 23 and fig, 8*a* on p. 22.

[44] *VS* pl. 38. 2 and 3. *NC* 271, fig. 116.

[45] *NC* nos. 208–25, 245, 565.

[46] A 451–2 (*CVA France* 484. 20, 23).

88. PLATE 24. Alabastron.
Height 0.08.

Complete. Light-brown clay; black glaze, tongues round mouth, rim plain; body black with four narrow reserved bands; incised tongues on base and neck. The scheme of decoration is unusual, if not unique.

Early Corinthian.

89. PLATE 24. Alabastron.
Height 0·075.

Complete. Light-brown clay; worn black glaze; tongues on the base and neck; round the body bands of chequers separated by polychrome bands (red on black). Cf. *NC* 283, fig. 121*b*.

The shape is short and squat, with a wide neck. Transitional or Early Corinthian.

90. PLATE 23. Fragment of body of large oinochoe.

Light-brown clay. On the shoulder, polychrome red and black scale pattern with double incisions. The black scales have white spots at the root, some of which have worn off. Round the body, two animal friezes, bounded above and below by polychrome bands (white and red upon black). Round the base, black rays.

In the upper frieze: lion to right (head and forefeet only preserved); sphinx to right; siren with wings displayed to right; sphinx to left; goose with wings folded to right; goat to left (part of horn and forefeet only preserved).

In the lower frieze: goat to left (hindquarters only preserved); panther to right; goat to right; lion to left.

Interior details incised; red paint very frequently used. Filling ornament incised rosettes and dot-and-circle rosettes.

The drawing on this oinochoe is neat and careful, though the bodies of the animals in the lower zone are unduly lengthened and the wings of the siren are awkwardly spread out. Style and filling ornament resemble those of three small oinochoai from Corinth,[47] of which one, from a well group from the north side of Temple E, is compared by Boulter with another from the same well by the Sphinx Painter.[48]

Our vase also bears a strong resemblance to the Sphinx Painter's work; note especially the goat's eye and the face of the lion confronting him (cf. *NC* pl. 12. 9). In time it seems to fall midway between the painter's early work and *NC* no. 759 (compare our siren with *NC* pl. 21. 9. The drawing is similar though ours has no white dots.) The lavish use of colour is also typical. But the quality of the drawing is inferior to his best work and I believe that this is the work of a close associate rather than of the Sphinx Painter himself. There may be a connexion with *NC* no. 138 (pl. 13. 1); compare the panthers; the faces are very similar, though the earlier beasts have furrowed brows.

Scale ornament on the shoulders of oinochoai is fairly common in the Late Protocorinthian and Transitional periods,[49] but in the Early Corinthian is usually replaced by incised tongues or an additional animal frieze (both these methods of decorating the shoulders are used earlier; e.g. *NC* nos. 130–1). The use of the dot-and-circle rosette also connects our piece with earlier vases, though in itself it is no proof of an early date.[50]

H(3). *The Ruins of the Houses*

The ruins of the houses destroyed by Alyattes were disturbed by later foundations and the pieces from them are therefore not so clearly stratified as those from the temple area. Many obviously early sherds were found even in fifth- and fourth-century levels. Such as are illustrated will be described together with the late pieces in whose company they were found and this section will be reserved for fragments which were certainly from the destruction level.

91. PLATE 24. Alabastron.
Height 0·095.

Restored from fragments; part of body missing. Subgeometric decoration like Ure, *Aryballoi and Figurines from Rhitsona*, pl. 5, 97. 3, which was found in a grave of the Early Corinthian period.

92. PLATE 24. Small flat-bottomed aryballos.
Height as preserved 0·055.

Restored from fragments; mouth, neck, and handle lost. Light-brown clay; dark-red glaze; tongues on shoulders and foot; round the body two rows of chequer pattern between polychrome bands (purple on red). The shape resembles that of two aryballoi with scale pattern from Grave 13 at Rhitsonia.[51] *NC* no. 644 (fig. 128) has a rather smaller foot, but the scheme of decoration is close to ours.

---

[47] *Corinth* nos. 204, 206, 226. No. 226 is no. 40 of Boulter's group (*AJA* xli. 217 ff.) and compared by him with his no. 39 (= *Corinth* no. 225) which is the Sphinx Painter's. Weinberg says that the drawing of *Corinth* no. 226 is slightly more careless, but the connexion is obvious and close.

[48] *NC* 31 n. 1.

[49] e.g. Robertson, op. cit. nos. 146–9, 151, 154. Brock, *BSA* xliv, pl. 17. 10.

[50] It is used by the Dodwell Painter on the neck of *NC* no. 861.

93. PLATE 25. Fragments of large alabastron.

Light-brown clay; black glaze. The decoration was divided into several friezes, of only one of which are any fragments preserved, though the claw of a lion from the frieze above appears on the top left fragment. Padded dancers are performing to the music of the flute. Details incised; added red on the dancers' dresses, which have small white dots along the hems. Filling ornament incised rosettes, both of the simple sort in which all the incisions meet in the centre, and of the more elaborate type whose petals spring from two concentric circles. Both sorts are carefully executed and have more than the usual number of petals.

There are several points of resemblance between these fragments and a large alabastron, decorated in the White Dot style, in the Louvre.[52] It would be unsafe to make close comparisons as this vase has been restored; note, however, the back of the dancer's head, the clothes with rows of white dots at the hem, and the filling ornament. The Louvre alabastron is certainly later than ours,[53] its decoration is not divided into friezes, and its figures are not only larger but less neatly drawn. Our fragment may come, therefore, from a forerunner of the White Dot style properly so called, and should be placed well before the end of the Early Corinthian period.

Context: Trench B, Room D. Fragments at 0·40–0·55 and 1·00–1·10.

94, 94*a*. PLATE 25. Fragments of large alabastron.

Light-brown clay; black glaze. Confronted lions; filling ornament incised rosettes. (I have not myself seen the fragments illustrated as no **94*a*.**) Early in the Corinthian period. Dunbabin attributed no. **94** to the Zurich Painter, to whom he assigned the following works:

1. *NC* no. 564, pl. 22. 8.
2. *NC* no. 228, pl. 17. 3.
3. Alabastron, Syracuse, *MA* xxv. 555, fig. 141*c*.
4. Alabastron, Oxford, ex Gloucester, unpublished.
5. *NC* no. 246 (?).
6. *NC* no. 762, pl. 18. 4.
7. Perachora 1543 (alabastron fragment).
8. Perachora 1518 (alabastron fragment).
9. Smyrna **94**.
10. *NC* no. 801. *CVA Louvre*, ix, pl. 31. 15–17.
11. Zurich. Bloesch, *Antike Kunst in der Schweiz*, pls. 8–9.

95. PLATE 25. Fragment of large alabastron.

Light-brown clay; black glaze; padded dancers; filling ornament incised blobs. Crude but lively; somewhat similar dancers on the three friezes of a big alabastron in Goluchow.[54]

96. Not illustrated. Mouth and neck of large alabastron.

Black tongues on neck and lip, dots round rim.

97. Not illustrated. Lower part of body of large alabastron. Haunches of two sitting felines; filling ornament incised rosettes; crude style; very badly worn.

98. PLATE 26. Handle of small aryballos.

Painted double cable-pattern.

Late Protocorinthian or Transitional.

99–107. PLATE 26. Fragments of small aryballoi and alabastra.

103 (on its side in the photograph) is from a small alabastron; related to the Dolphin Painter but less heavy incision of the foreleg; perhaps closer to the earlier group *NC* nos. 76–83.

108. PLATE 25. Fragment probably from a large round aryballos.

Light-brown clay; black glaze; large incised rosette between what appear to be bird's claws.

109. PLATE 25. Fragment of piriform aryballos.

Pink clay; red-brown glaze; certainly not Corinthian shape. (Cf. *VS* 176 ff.)

110. PLATE 29. Fragments of small round aryballos.

Fighting hoplites. Cf. *NC* pl. 21. 6.

111–12. PLATE 25. Fragments of the feet of two small kotylai.

Slightly splayed ring feet of typical Early Corinthian form. For the 'squiggle' among the rays cf. *Corinth* no. 261.

113. FIG. 2. Fragment of miniature kotyle.

Cf. nos. **72–73.**

113

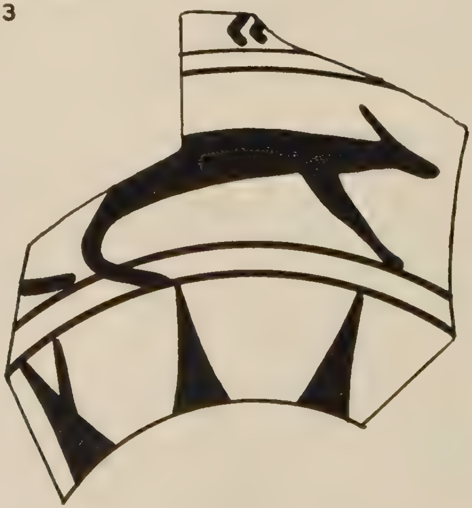


FIG. 2

---

[51] *JHS* xxx. 349. This grave also contained piriform aryballoi, one of which was almost identical with our no. **84.**

[52] *NC* 382 (*CVA France* pl. 598).

[53] On the date of the White Dot style see Amyx, *Corinthian Vases in the Hearst Collection at San Simeon.*

[54] *CVA Poland* pl. 6. 11.

114–19. PLATE 26. Fragments of small oinochoai.
No. **117** ; cf. no. **90**. No. **115**; cf. *Corinth* nos. 227–8.

120–1. PLATE 26. Fragments of olpai.

122. PLATE 29. Several fragments (not all illustrated) of a flat-bottomed oinochoe.

Diameter of base about 0·20.

Pale-green clay; glaze very much worn; short rays round foot; fragments of two animal friezes (feet of felines and goats). The sherd illustrated comes from the upper frieze: head of sphinx wearing polos; filling ornament incised rosettes.

123. PLATE 29. Fragment of large closed vase.

Bull's head drawn in a heavy manner, well suited to the nature of the beast; incised rosettes.

124. PLATE 26. Fragment of lid of powder pyxis.

Diameter 0·095.

Light-brown clay; well-preserved dark-red glaze; pairs of confronted sphinxes wearing poloi, in sihouette style without incision. Each pair is separated from the next by groups of wavy vertical lines. Rim grooved; round the side wall a continuous band of wavy vertical lines. Inside reserved.

125. PLATE 26. Fragment of lid of powder pyxis.

Clay and glaze like no **121**; on top, tongues. Round the side wall wavy vertical lines.

A lid like this was found with two concave-sided pyxides of Late Protocorinthian and Transitional type in Grave 71 at Phaleron.[55] This type of powder pyxis is discussed by Hopper in *BSA* xliv. 216 ff., who concludes that they may be early, though the examples from Perachora, where they are common, give an opposite impression at first sight. Several pieces with animals in silhouette style are known, but the true black-figure style with incision seems never to have been used on the lids of powder pyxides.

126–7. PLATE 26. Fragments of concave pyxides.

Polychrome Subgeometric decoration.

128–9. PLATE 26. Fragments of lids of similar pyxides.

No. **128** may belong to no. **126** (diameter about 0·10).

Late Protocorinthian or Early Corinthian (cf. *NC* 292, no. 665, and fig. 129).

130. PLATE 27. Aryballos.

Height 0·065.

Restored from fragments; a few chips and part of the foot lost. Heart-shaped body with high flat shoulders and a shallow circular sunken recess beneath the foot. Light-brown clay; black glaze; tongues round mouth, shoulder, and foot; dots round rim; on the handle, four short thick horizontal bars between black lines, which run down each side.

The main decoration is bounded by double lines above and below. On the front of the vase is a goddess with wings displayed. Her head is turned to her left. She wears a polos from beneath which her long hair falls to her waist, which is very tightly girdled. On either side of the lower part of her dress is a narrow panel decorated with an incised vertical zigzag. These panels come down well below her feet and cut the bounding lines of the picture. Her wings spring from her sides, instead of her shoulders. She has no arms, but from the lower part of each wing grows a hand, rather like a bat's thumb. In each hand she grasps the neck of a large goose.

On the back of the vase is 'Typhon'.[56] He is bearded and his hair falls to his shoulders from beneath a ribbon round the top of his head. His hands, like the goddess's grow, from the lower part of his wings. They are connected by a horizontal zigzag between two incised lines. His waist is tightly belted and he has an eel's tail.

The style is crude but vigorous, with free use of incision. A few large incised rosettes are used as filling ornament.

The shape and decoration of this vase link it closely to a small aryballos in the Ashmolean Museum,[57] which has on its front a Boread who is clearly first cousin to our Typhon. Note especially the ear, beard, and eye, and the anatomy of the wings (rather more sharply curved at the tip) and hands. Both Typhon and Boread are descended from monsters like that on *NC* no. 98*a*.[58] This creature has proper arms and wings growing from his shoulders. He wears a short tunic on whose neck and sleeves is a pattern from which the zigzag that stretches across the body of his descendants is derived. The half-way stage in the degeneration of the arms is found on an Early Corinthian alabastron in Munich;[59] the arms of the winged female figure on this vase, though greatly enfeebled, are not yet mere appendages to the wings, and the incised zigzag is clearly a pattern on her dress, whose sleeves are indicated. It is perhaps worth noting that the whole race of winged monsters does not degenerate in this way. The latest Typhon mentioned by Payne[60] has arms that are arms and wings that grow from the shoulders. But he is far more carefully drawn than our monster. Moreover, he does not belong to the same branch of the family, as there is no zigzag on his dress.

---

[55] *AJA* xlvi. 37, fig. 22; *ADelt* ii (1916) 34, fig. 26.

[56] *NC* 76.

[57] *Ashmolean Museum, Report of the Visitors* 1949, pl. 4B. Not by the same hand, but from the same workshop.

[58] *NC* pl. 15. 5.

[59] Sieveking-Hackl, *Die Königliche Vasen-Sammlung zu München* 19, no. 274, and fig. 25 (= *NC* no. 343).

No. **130** is a most unusual piece and therefore difficult to date when it is considered by itself. The other pieces from the destruction level are all Transitional or Early Corinthian in date. There were no fine Protocorinthian and no Middle Corinthian pieces from this level. The necessary conclusion is that Smyrna was destroyed by Alyattes during the Early Corinthian period, and in my opinion well before the end of that period. The historical evidence for the date of the destruction will be examined more closely elsewhere; here it will be sufficient to say that King Alyattes during the first five years of his reign was involved in a war with Miletus in which no other Ionian state, except Chios only, was recorded to have taken part.[61] At the time when the war ended Thrasybulus was tyrant of Miletus and Periander of Corinth.[62] Later Alyattes fought for five years against Kyaxares the Mede. This war was brought to an end by an eclipse of the sun,[63] generally taken to be that of 585 B.C. It is unlikely that Alyattes was free to make war on Smyrna during the first five years of his reign, or during the five years' war that ended with the Battle of the Eclipse. If Herodotus's figures for the reigns of the Lydian kings and the date 546 B.C. for the overthrow of Croesus are accepted, the sack of Smyrna should fall either in the period 621–590 B.C. or after 585 B.C. (The argument is not much affected if Herodotus's figures are rejected, as the date 585 B.C. is fixed without reference to the length of the king's reign or the date of his death.) In his summary of Alyattes's reign[64] Herodotus puts the sack of Smyrna after the war with the Medes and the expulsion of the Kimmerians from Asia, but it is quite likely that he was not recording these events in historical order, as he continues with an account of the Milesian war, which began the reign.

This is as far as the Corinthian pottery, considered by itself, takes us[65]. But I understand that other reasons for supposing that Alyattes destroyed Smyrna early in his reign will be given elsewhere.[66]

The vases simultaneously destroyed in the sack of the city were not necessarily made simultaneously. Pieces tended to be preserved longer in the temple than in private houses (indeed if we had only the Corinthian pottery from the cella to go by, we might conclude that the temple was destroyed about twenty years before the rest of the city). The pottery from the white chip layer shows clearly that the contents of the temple accumulated over a period of time.

I. *The Reoccupation of the Site*

Nearly all the Corinthian sherds found in the upper levels were mere scraps. Together with other early sherds, they were found in fifth- or fourth-century contexts, in which their presence is obviously without chronological significance. Many of them are Transitional or Early Corinthian and must be part of the wreckage from the destruction of the city, but there are some

---

[60] *NC* 985 (Sieveking-Hackl, op. cit. fig. 13). End of the Middle Corinthian period. See also Amyx, op. cit. 220, on the development of these creatures.

[61] Herodotus i. 18.

[62] Ibid. 20.

[63] Ibid. 74.

[64] Ibid. 16.

[65] This article was already in proof when I had access to the important publication by Vallet and Villard of the new Corinthian material (LPC and Transitional) found by them at Selinus (*BCH* lxxxii. 16 ff.). This inevitably reopens a twofold problem too great for discussion here, that of the absolute date for Selinus' foundation, and the chronology of Corinthian pottery in so far as it depends on that date. I have therefore omitted any discussion of Selinus from my text, and refer the reader to J. M. Cook's comments, p. 27, n. 71.

[66] See also Hopper's chronological discussion, op. cit. 177 ff.

Middle Corinthian pieces which were imported after the site was reoccupied. Of these, only nos. **131–3** came from a significant context (Pit 5 in Trench R).

The sherds from the later levels are far more worn than those which were found in contexts to which they belonged.

131. PLATE 28. Three fragments of a large over-fitting lid. Diameter 0·30.

Light-brown clay; black glaze; animal frieze between polychrome bands (fine white and red lines on black glaze); round the centre, rays (tip of one only preserved).

The preserved fragments show:

(*a*) Head of lion to right; forefeet of bull to left.

(*b*) Part of claw of lion or panther to left.

(*c*) Legs of dancer (note cloven feet), sphinx, panther, all to left.

Interior details incised; red paint freely used on the necks and bodies of the animals and the sphinx's wings and face. The red spot on her tail is probably accidental. Filling ornament incised rosettes and blobs.

(*a*) has been badly worn near the rim, but is shown by the exact correspondence of the wheel marks and polychrome painted bands, the diameter, the height of the rim, and the thickness of the clay, to be from the same lid as (*b*) and (*c*).

132. PLATE 28. Fragment of large open vase.

Light-brown clay; black glaze; rays at foot; polychrome band (red and white on black); animal frieze (bull to right facing lion to left). Interior details incised; added red on the bull's neck and the lion's mane and ribs. Filling ornament incised rosettes and blobs. Inside covered with thin bright-red glaze with a broad horizontal band left reserved.

Almost certainly nos. **131** and **132** belong together; compare the bulls' faces, especially the eyes and the double incised chevron that serves for mouth and nostrils; note also the incised shoulder lines of the various animals. No. **132** was therefore probably a kotyle-pyxis rather later than the latest examples of the shape mentioned by Payne.[67] Our thin mournful panther can hardly be earlier than the end of the Middle Corinthian period.

133. PLATE 28. Fragment of lid with in-fitting rim. Diameter 0·14.

Light-brown clay; black glaze; tongues round centre; double chequer between polychrome bands (white and red); animal frieze (two panthers to right). Interior details incised; added red on the panthers' necks and flanks. Filling ornament incised rosettes.

Very poor and weak drawing of the end of the Middle Corinthian period.

All the other pieces illustrated come from late, confused contexts.

134. PLATE 25. Fragment of kotyle.

Light-brown clay; reddish glaze inside and out. Vertical wavy light lines at rim; two narrow horizontal lines; animal frieze (lion or panther to left). Interior details incised; filling ornament blobs.

Middle Corinthian.

From a confused area to the south-west of the Temple where the white chip layer was disturbed in the course of later construction.

135. PLATE 28. Fragment of kotyle rim.

Light-brown clay; black glaze (worn). Siren's head and wing; details incised; added red on face and wing.

Middle Corinthian; related to Payne's Samos group (*NC* 309).

136. PLATE 28. Two fragments of kotyle.

Clear dark-brown glaze inside and out. Bird's wing. Details incised.

137. PLATE 28. Fragment of kotyle rim.

Black glaze inside and out; double purple band round outside of lip; single purple band inside lip.

Middle Corinthian (cf. *Corinth* nos. 343–53).

138. PLATE 28. Fragments of large kotyle.

Foot of lion or panther; polychrome band (red on black); tip of ray.

139. PLATE 28. Fragment of large kotyle.

Light greyish clay; black glaze inside and out; two narrow red bands above fine rays.

Middle Corinthian (cf. *Corinth* no. 342).

140. FIG. 3. Fragment of kotyle.

Goat in silhouette style; dotted background.

Middle Corinthian (cf. *NC* 309, fig. 150).

140

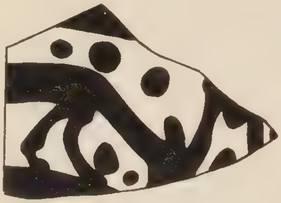


FIG. 3

141. Not illustrated. Fragments of feet of at least three kotylai. Similar to *NC* no. 973. Widely-splayed feet with fine rays. This type certainly continues until late in the sixth century, but may begin in the Middle Corinthian period. (See Payne's comments on *NC* nos. 973, 1341.)

142. PLATE 28. Fragment of shoulder of small closed vase (oinochoe?).

Light-brown clay; black glaze. Panther to right; details of face incised. To left, tail of second panther. Filling ornament blobs.

143. PLATE 28. Fragment of closed vase.

Part of bird's tail (?); incised rosettes.

144. PLATE 25. Three fragments, probably of large alabastron, decorated in the White Dot style.

Amyx (op. cit. n. 53 *supra*) holds that most White Dot vases belong to the Middle Corinthian period. No White Dot vases, except the obviously early no. **93**, were found in the destruction level.

---

[67] *NC* nos. 974, 974*a*. See also Hopper, op. cit. 224. Our fragments are of course quite unconnected with these rather fine, delicate vases.

145. PLATE 25. Fragment of large alabastron.
Light-brown clay; black glaze; legs of large bird; details incised; filling ornament incised rosettes. Dull, lifeless drawing.

146. PLATE 29. Lower part of round aryballos.
Restored from fragments; badly worn. Padded dancers; details incised; added red on clothes; filling ornament incised blobs; on the bottom a whirl.

147. PLATE 29. Fragment of shoulder of small closed vase (? oinochoe).
Very badly worn. Naked youth, with a stick in his right hand, approaching a tethered horse; details incised; filling ornament incised blobs.
Middle Corinthian.

148. PLATE 29. Fragment of closed vase.
Badly worn. Lion's body; filling ornament dot-and-circle rosettes. Transitional or early in the Early Corinthian period; compare the drawing of the lion's shoulder with *NC* pl. 18. 4.

149. PLATE 30. Fragment of closed vase.
Cut into a rough circle, probably for use as a stopper. Badly worn. Lion's body; details incised; filling ornament blobs and dot-and-circle rosettes.
Early Corinthian.

150. PLATE 30. Fragment of closed vase.
Badly worn. Goose's head and neck; hind leg of goat or stag.
Transitional.

151. PLATE 30. Fragment of closed vase.
Badly worn. Female head; filling ornament incised rosettes. Above, three fine lines and feet of bird (?).

152. PLATE 30. Fragment of closed vase.
Badly worn. Female head; filling ornament incised blobs.

153. PLATE 28. Fragment of lid with in-fitting rim.
Diameter 0·08.
Light-brown clay; dark-purplish glaze; goose; crude drawing; details incised.

154. PLATE 28. Fragment of tripod-pyxis.
Dull dark-brown glaze. Payne (*NC* 293) says that this shape is characteristic of the sixth century. This is certainly not an early example.

155. PLATE 28. Fragment of large closed vase.
Lion's legs; incised rosettes.

156. PLATE 26. Fragment of rim and body of column-krater.
Outer diameter about 0·26.
Greenish clay; black glaze (much worn) on body; rim reserved, with a picture of a dolphin. The handle-plate must have been attached here. It has broken away along the line of attachment and so the dolphin has lost the lower fluke of his tail. There is no incision on the dolphin, but a little incised rosette is visible near the small of his tail.
Early Corinthian.
From the south-east sector of the city wall.

157. PLATE 30. Part of rim and handle-plate of column-krater.
Inner diameter about 0·24.
Badly worn. On the rim, zigzags; on the handle-plate, sphinx or siren (head and part of wing preserved): details incised. Careful drawing of the end of the Middle Corinthian period (cf. *NC* pl. 28. 10).

158. FIG. 4. Fragment of krater.
Glaze completely worn away. Banqueting scene (hand holding cup; part of couch with long-fringed cover; table, upon which stands a second cup).
Middle Corinthian (cf. *NC* no. 1182).

158

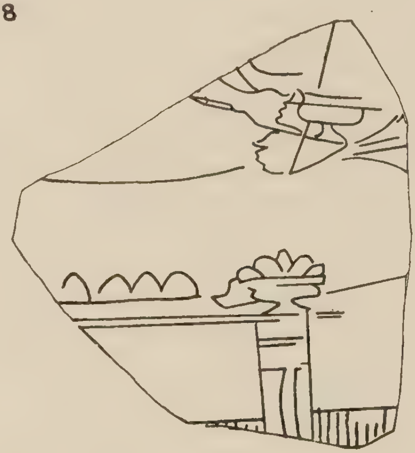


FIG. 4

159. PLATE 30. Fragment, probably of krater.
Very badly worn. Part of head and body of long-haired bearded man. Filling ornament incised rosettes.

160. PLATE 30. Fragment, probably of krater.
Very badly worn. Lower part of woman's body with painted inscription αλκθλα retrogade. This might be for 'Αλκιθέα or 'Αλκιθόα (alt. 'Αλκαθόα). Mr. Cook suggested ἄϝεθλα, 'the prizes'; the fragment would then come from a picture of games or races; we might even suppose the lady to be the second prize at the funeral games of Patroklos. But nonsense inscriptions are common on Corinthian vases.

Unpublished fragments from late levels include scraps of small aryballoi and alabastra (one piriform, with Subgeometric decoration), bits of pyxides and lids (including several kinds) of the same sort as nos. **126–9** *supra*, and two fragments of small black conical oinochoai with incised tongues on the shoulders. Most of these are obviously wreckage from the sack of the city by Alyattes.

Although Middle Corinthian pieces are fairly numerous in the later levels we have no certain Late Corinthian vases. We have no pieces in the White Style, and only one possible red-ground vase, which will be discussed elsewhere.[68] It seems that Corinthian pottery must have no longer been imported, at least in any quantity, during the Late Corinthian period, when its quality had declined and superior Attic and Ionian vases were available.[69]

J. K. Anderson

---

[68] In the publication of the Ionic black-figure pottery from the site.

[69] Cf. *NC* 111. An alternative explanation is advanced by H. R. W. Smith (*Archaeology and the date of the Kypselids*; *University of California Publications in Classical Archaeology* i, no. 10, 254 ff.) But see also Hopper, op. cit. 173, latter part of n. 43, in which it is shown that Corinthian aryballoi and alabastra continued to be imported into Rhodes during the first part of the Late Corinthian period—perhaps for the sake of their contents.

OLD SMYRNA: THE ATTIC POTTERY

(PLATES 31–44)

THE earliest fine Attic pottery (excluding scraps of Geometric ware) found at the site of Old Smyrna[1] was made in the first quarter of the sixth century (see no. **2** in the Catalogue below), although it is not until the second quarter that it appears on the site in any appreciable volume. One of the earliest, and incidentally most complete vases among otherwise very fragmentary material, is a lebes gamikos (no. **1**) from the workshop of Sophilos, and it is accompanied by near-contempory lekanai by known painters. From this time on into the first decade of the fifth century fragments of almost every known variety of Attic cup are found, some of the highest quality, and at the end of this period skyphoi and lekythoi also appear while larger vases are conspicuously few. In the first quarter of the fifth century there is a marked falling off in the import of Attic pottery and it is noteworthy that no vases later than the first decade of that century were found in the main excavated area of the sixth-century houses at the north end of the site, and only isolated fragments from Trench C to the West. The possible historical significance of this is pointed out elsewhere by Mr. Cook.[2] By the middle of the fifth century import is resumed on a small scale, but it is of high quality, including as it does a volute crater by the Niobid Painter (no. **118**). The volume increases to the beginning of the fourth century, dying away again by the middle of it, and in this period fine black pottery, some of it with impressed decoration, appears beside the figured vases. The Attic black pottery of the fourth century is intimately associated with its numerous Ionic imitations and the presence of some of the commoner shapes is noted in the publication of the Ionic ware in a later volume of this Annual, to which the reader is referred.

The pottery is discussed here in catalogue form grouped by shape within each of the three sections—Black Figure, Red Figure, Black and Patterned Ware. Each item represents a fragment or fragments of a single vase, or in some cases a group of fragments from different vases which do not merit individual treatment. Plain painted pottery of the sixth and earliest fifth century is included with the Black Figure, and not the Black and Patterned Ware which is of the second quarter of the fifth century on. Lips, feet, and other members of vases which may have borne decoration are not mentioned unless they afford evidence of types whose presence is not suggested by the published figured fragments. The inscriptions and graffiti on these vases will be discussed by Dr. L. H. Jeffery. The provenience of individual pieces is stated in selected instances where the pottery is of particular value for the dating of occupation levels, or acquires a closer dating from its contexts. Throughout references to *CVA* are by museum fascicule number and national plate number. Significant measurements only are recorded (in centimetres), as centimetre scales appear in the plates and the scale proportion is stated with the text figures. Only the few vases at present displayed in the Fuar Museum in Izmir have been given museum inventory numbers, and these I have recorded. The catalogue numbers below are those quoted by Sir John Beazley in his *Attic Black-figure Vase Painters* (*ABV*). I have inserted a number of references to this important work which appeared after the present study was written.

---

[1] I am indebted to Mr. J. M. Cook for some of the photographs. Professor Sir John Beazley has confirmed and contributed attributions and I have greatly profited from his comments. The hospitality of the staff of the American Excavations in the Agora at Athens and the free access to their shelves and experience with Attic pottery which I have enjoyed have been invaluable. All the drawings and profiles, except for FIGS. 1 and 2 which are by Mrs. Neriman Tezcan, are by Mrs. G. U. S. Corbett.

[2] See pp. 31f.

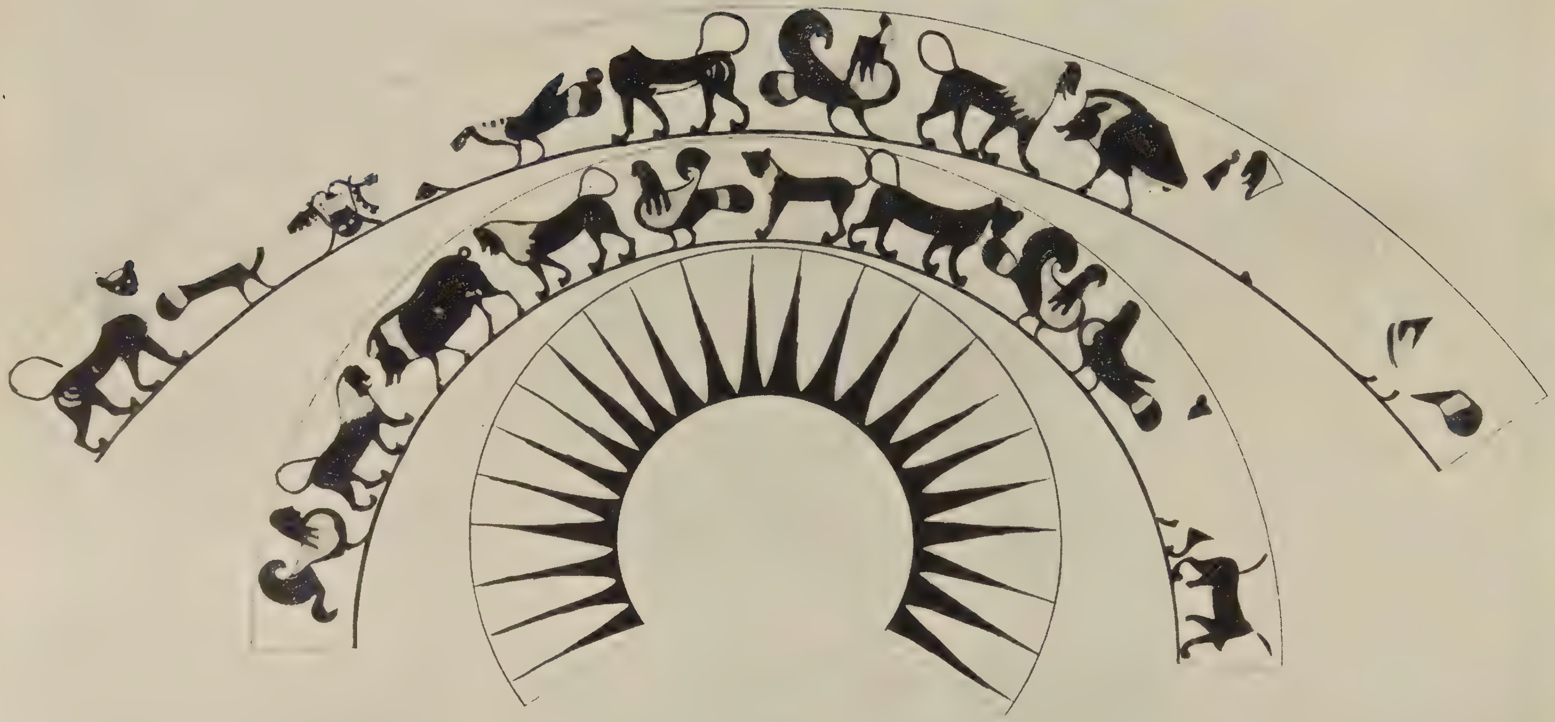


Fig. 1. Lebes gamikos no. 1. The lower zones on the body (1 : 6)

The considerable increase in information about East Greek black-figure styles which has been afforded by the excavations at Old Smyrna has not in fact made the task of distinguishing them from Attic any easier, but rather has emphasized how fine the distinction may sometimes be. That further study and excavation may prove our division of the material at fault in some respects is freely admitted.

I. Black Figure

Lebes gamikos

1. Inv. 3332. PLATES 31, 32, FIGS. 1–6. J. M. Cook, *JHS* lxx (1950) 10; E. Akurgal, *Bayrakli* 69; J. Boardman, *BSA* xlvii (1952) 31, 34; Beazley, *ABV* 40, Sophilos no. 20, and 714; L. B. Ghali-Kahil, *Les Enlèvements et le retour d'Hélène* 114, pl. 87, 1. Complete height 70·0, diameter at lip 32·3; about one-quarter of the vase is missing. The fragments of the lower body and foot were discoloured by fire as was part of the shoulder, the centre-back having suffered most in this respect. The body is unpainted within, but for a broad band at the top in the rim and, at the inner corner of the rim, a red line. The rounded mouldings outside the lip are painted and between them is a running-dog frieze. The neck is all painted but for a band beneath the overhanging lip and a red line runs along the junction of the neck and body. A chariot scene fills the shoulder zone on *A* (PLATE 32, FIG. 3*a*); above it is a row of nine rosettes, their alternate petals bearing a blob of red. In the left-hand chariot stand two men whose features are missing; they wear red himatia and the nearer of the two a chiton painted white directly on the ground of the vase, lightly outlined and striped vertically in brownish paint. He holds a whip and the reins, whose ends fall before his legs in the chariot. The chariot itself is painted red and the ties represented by the incised lines on the haunch of the second near horse are continued to the chariot in white lines; its wheels were compass drawn, though not without difficulty. The near horse has red on his haunch, a red neck (as has his team mate), alternate red locks to his mane, and red eyes; the line of the rear haunch was incised twice, the first time inaccurately. Over the team's back and before their drivers are the painted names ΓΟ∨V[ΔEV]K[EΣ] and [K]AΣTOP. At the left of the fragment on which the second chariot appears is a semicircular incised line enclosing a red area; this I can restore only as the breast of the small siren with head turned back which often appears in such scenes. In the second, the leading chariot, stand a man and a woman. He holds the reins and a whip, his himation is red and above and below it appears his white chiton again painted on the ground of the vase, with outline, horizontal and vertical stripes in brownish paint. The woman holds her himation over her head and out before her face,

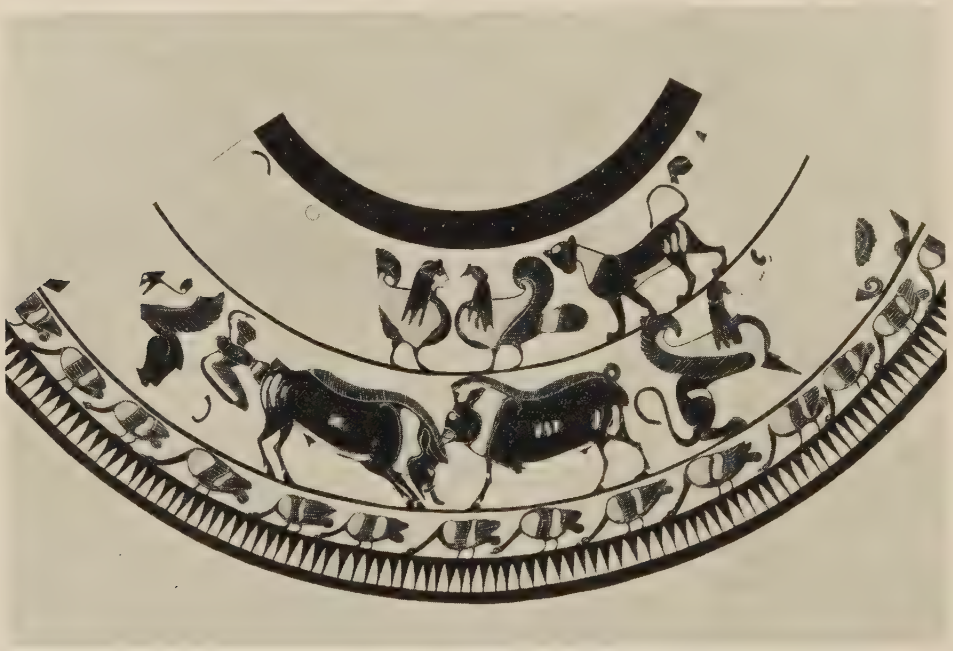


Fig. 2. Lebes gamikos no. 1. the foot (1 : 6)

which, with her arm, is painted white directly on the reserved ground of the vase. The lower inner side of her hanging himation is red. The chariot is red, its wheels again compass drawn and with as little steadiness. The tails only of the horses are preserved; over their backs is the name ⊟E∨EṆ[E]. Under each of the single black-painted handles stands a male figure facing the main scene (FIG. 3*b*). Of these little is preserved, but the one under the right handle has a red himation and is holding out his hand which grips something (not a staff; the line below is the panel border). On *B* (FIG. 4) under a row of eleven rosettes sit two sphinxes facing each other over a palmette and lotus complex, on the upper lotuses of which sat two small panthers, part of one of which is preserved. The base of the lotus at the bottom right is incised with the pattern of the tendrils continuing along it as though it were part of a chain not a cluster. The two zones below (FIG. 1) present continuous friezes of animals grouped symmetrically front and back and facing their centre-piece. Thus, on *A*, a palmette and lotus complex on either side of which stand a siren and a panther: below them is a boar with a lion, a siren and a panther on either side. On *B* a boar with a lion and a siren on each side of him; below them two facing sirens with a panther on either side. Behind the siren which stands below the left-hand chariot is the ghost of another siren painted, but not incised, and partially erased by the painter when he realized his miscalculation. The two-legged panther in the zone below (FIG. 6*c*), a strange beast, has been given a third scratched leg, probably not by the artist as it is not painted and he did not even lightly incise guide lines (see the ghost siren mentioned above). The base of the body is ringed by twenty-four poorly drawn rays.[3] Between body and foot are two painted angular mouldings. The foot itself is pierced at the top with two circular holes 1·1 in diameter. On it are three animal friezes (FIGS. 2, 5) the first of which bears confronted sirens with a panther on either side and a siren central on *B*, the second two facing boars, a flying bird to their left, and on *B* a sphinx on either side of a palmette and lotus complex: below is a frieze of feeding geese moving left. On the flaring foot below a light moulding are small down-pointing rays.[4] Detailed peculiarities of the animals and decoration are described below. On the whole outline incision was freely employed, and the whites of the boars' eyes are scratched out. Red appears on lotus boxes, palmette centres, and alternate petals, sphinxes' and sirens' faces, wing boxes and some tails, lions' and panthers' manes, some ribs, haunches, and bellies, boars' shoulders, haunches, ribs, bellies, and eyes (on the foot), geese-wings; white appears only in the main shoulder scene on *A* and there always directly on the ground of the vase.

The vase approaches closely the group attributed to the painter Sophilos, and though it seems to me not to be by him it must be from his workshop and its place in the history of Greek vase painting is determined by his work.[5] The master himself, Sophilos, is known by three fragmentary vases bearing his name, and from the animals fortunately extant on one of them other animal vases can be attributed with some confidence to his hand.[6] This is particularly valuable as there is otherwise little to connect his lively figure style with his more sketchy but bold animal drawing. His earliest work is good, but is his best, as by the end of his career he was plying the graver with less confidence than the brush.[7] This introduces a superficial appearance of unevenness in his work which is belied by the underlying painting, which is always good.[8]

---

[3] Twenty-three on FIG. 1.

[4] In the vase as it is at present restored three pieces have not been incorporated. They appear in the drawings published here and are the centre part of the hairy panther (FIG. 6*c*), the tail of the panther (FIG. 6*a*), and the back of the head and wing of the siren at the top right of FIG. 2.

[5] Sir John Beazley tells me that he prefers not to dissociate it from the other vases attributed to Sophilos.

[6] Beazley, *ABV* 37 ff., lists his work. Mme Karouzou assigned to his hand also much of the work of painters now identified as the Gorgon Painter and KX Painter (*ABV* 8 ff., 23 ff.), many of the former's vases being listed by her as of Sophilos' First (archaisch) Period, and the latter's his Second 'strenger Stil' (*AM* lxii (1937) 132 f.). I follow Beazley here but her analysis of the group is invaluable. On Beazley's nos. 21 and 36 see below, n. 10; and nos. 38–40 see *BSA* l (1955) 59. Add a neck amphora, Warsaw 138537, Michalowski, *Sztuka Starożytna* 99, fig. 52. See notes 7 and 14 for Sophilean fragments from Gortyn and Naucratis.

[7] Beazley (*Development* 17) puts his mythological scenes late in his career while Mme Karouzou (*AM* lxii (1937) 133 f.; she intends the list to be approximately chronological) places them early among the Sophilos vases. I would put the Akropolis fragments, *ABV* 39, no. 15, early in his career with nos. 17, 18, 24. The delicate treatment of features and the full curving members of the lotus (the triple line below petals in his later work is straight, cf. *AM* lxii (1937) pl. 51 with pl. 59, 2) suggest this. The plaques, nos. 38–40 (*AM* lxii (1937) pl. 48 ff.), and Lindos sherd, no. 37, are later, and with them the Pharsalos lebes, no. 16 (ibid. pls. 52, 53), where the coarsening of his animal style begins to become apparent. *ABV* 38 ff., nos. 5, 7, 12, 13, 27 are of this period and still show some fine animal drawing. The Menidi fragments, nos. 21, 36, may be later with the Marathon neck amphora (*AM* lxii (1937) pls. 61, 62). The last phase is that of the Vurva vase (no. 1; ibid. pl. 60), the chalice (no. 11; ibid. pl. 59, 2), Akr. 757 (no. 10; Graef, pl. 48), and the lekanai (nos. 28–30). His earliest work may be of soon after 590 and he seems to have painted nothing after 570. The Sophilean dinos from Gortyn (*Ann* xvii/xviii (1955–6) 45 ff., figs. 1–3) is later than the vases signed by or attributed to the artist. It differs from them in renouncing the Attic double shoulder lines, and the boar pricks his ears.

[8] The Pharsalos fragments illustrate this well. The treatment of the lion's head on the body (*AM* lxii (1937) pl. 53) compared with that on the rim (ibid. pl. 52) shows how much detail and precision can be sacrificed in less important parts of the vase. Contrast too the facing sirens from the

It is no wonder that he so often favoured a painted-outline technique for his figures, as the incised figures of his later work are invariably poor. It is with his latest work, little if at all before 570, that our vase is to be associated. There is on it some good incision (for instance the boars on the foot, PLATE 32, FIG. 5), but it is the painting which betrays the hand as other than the master's. Outline painting is used for some drapery and the woman's head, but outline and detail are in black paint, not Sophilos' customary red.[9] Most of the feline paws are angular and blunt, not knobbly.[10] The lions' heads are weak and some are flat and pug-like rather than leonine, and their tails describe a halting semicircle to droop on to their backs, while Sophilos' beasts almost always carry theirs in a free loop with the tip clear of their backs. Even in his latest work, poorly incised as it may be, Sophilos' painting is never thus. Here the animals are most like dolls where his live: compare the lion of FIG. 6 with *AM* lxii (1937) pl. 62 (centre left) which must be near contemporary. The incision too betrays radical differences in the summary paws, the lions' wind-swept manes which drift back over their ribs instead of hanging down (FIG. 6), their immense ears which leave no room for the detailing of the forelock,[11] their simple earlock and the details on the horses' bodies. Much of the drawing is good, however, and the boars on the foot match the best of Sophilos; their ears are set low and well back as are those of his beasts.[12] The horizontal muzzle lines of the panthers are Sophilean. The two-legged panther of FIG. 6*c* is an unusual creature though the semicircles on his forehead can be paralleled[13] and the hairy body is reminiscent of Sophilos' centaur, satyr, and some lions' muzzles.[14] The double row of wing feathers on some sphinxes and sirens looks back to the Gorgon Painter's finer work[15] and similar details appear in Sophilos' Louvre dinos and the amphora in Jena.[16] Their head-dresses are plain where Sophilos' are ornate with decorated fillets.[17] The floral complexes are of the familiar type and the triple straight lines at the base of the lotus petals and their crowding a mark of lateness;[18] the wavy line around the palmette hearts on the foot (FIG. 2) and below the main scene (FIG. 1) do not appear on Sophilos' vases. The small panthers lying on the lotus in the complex on *B* occupy a position occasionally reserved for such eccentricities in this period.[19] The main scene moves with a simple and appropriate dignity and is executed with adequate though not outstanding care.[20] The row of rosettes, the feeding geese, and the symmetry

---

same vase (*MP* xxxiii (1933) 46 f.), and compare the muzzle of the panther from the body (ibid. 47) with that of the panther on the rim (*AM* lxii (1937) pl. 52).

[9] On this see Beazley, *Development* 19; *ABV* 43; A. Rumpf, *Gnomon* xxv (1953) 469.

[10] Closest are on the Menidi fragment NM 2035, *JdI* xiii (1898) pl. 1, 1. Payne (*NC* 200 n. 1, and cf. *ABV* 40) objects to the attribution of all the fragments on *JdI* xiii (1898) pl. 1 to one vase. But the difference in thickness of the ground line to the main scene means nothing in vases of this type (cf. that above the rays on our vase PLATE 31, and those on the Louvre dinos *CVA* ii, pl. 63, 1–2). His second objection is that the frieze with the signature would be narrower than the frieze with animals below, which is 'obviously impossible'. But the centaur frieze on fr. 1 *is* narrower than the animal friezes below it, and the signature frieze fr. 3 seems likely to have been the same height as the centaur frieze. Curvature, slight variations in the thickness, and the colour and quality of the paint match on all fragments. What is perhaps more remarkable is that one vase in this style should bear two major scenes. Photographs of the two main fragments appear in *CVA* Athens, i, pl. 9, 1–2; the signed fragment is now inventoried NM 15918 (*AM* lxii (1937) 134, no. 32).

[11] Contrast *AM* lxii (1937) pls. 60–62.

[12] Cf. ibid. pl. 60 and Louvre *CVA* ii, pl. 63, 1; Gorgon Painter and KX Painter consistently set their boars' ears higher and farther forward (cf. Louvre *CVA* ii, pl. 64, 2, *AM* lxii (1937) pl. 45).

[13] Cf. *JdI* xiii (1898) pl. 1, 2.

[14] Cf. ibid. pl. 1, 1; *Lindos* i pls. 126–7, 2629; E. Bielefeld, *Zur griechischen Vasenmalerei* pl. 2; *AM* lxii (1937) pl. 62 (note too the dotted panther). A sherd from Naucratis in Oxford (G. 128. 27) has part of the body of a feline incised like the Smyrna panther, and must be Sophilean.

[15] Cf. ibid. pls. 64, 65.

[16] E 819, *CVA* i, pl. 31, 6, 12; Bielefeld, op. cit.

[17] Cf. Louvre E 873 (*CVA* ii, pl. 63, 2; Sophilos) and Akr. 474 (Graef pl. 17; Gorgon Painter).

[18] Contrast Akr. 587, *AM* lxii (1937) pl. 51.

[19] NM 1036, *AM* lxii (1937) pl. 61 (Sophilos), cf. the midget sphinx on his Louvre E 819, *CVA* i, pl. 31, 6. Cf. too Louvre E 817, ibid. pl. 31, 10 (Gorgon Painter); Boston F 347.6, Fairbanks pl. 38, and Akr. 472 (*AM* lxii (1937) pl. 56), the latter two both perhaps by the KX Painter (*ABV* 27). For some forerunners cf. K. Kübler, *Altattische Malerei* pls. 10, 70.

[20] Sophilos' chariot scenes on Akr. 587 (*AM* lxii (1937) pl. 51), NM 15499 (ibid. pls. 52, 53), Akr. 585, NM 15918 (*JdI* xiii (1898) pl. 1, 3; Athens *CVA* i, pl. 9, 1).

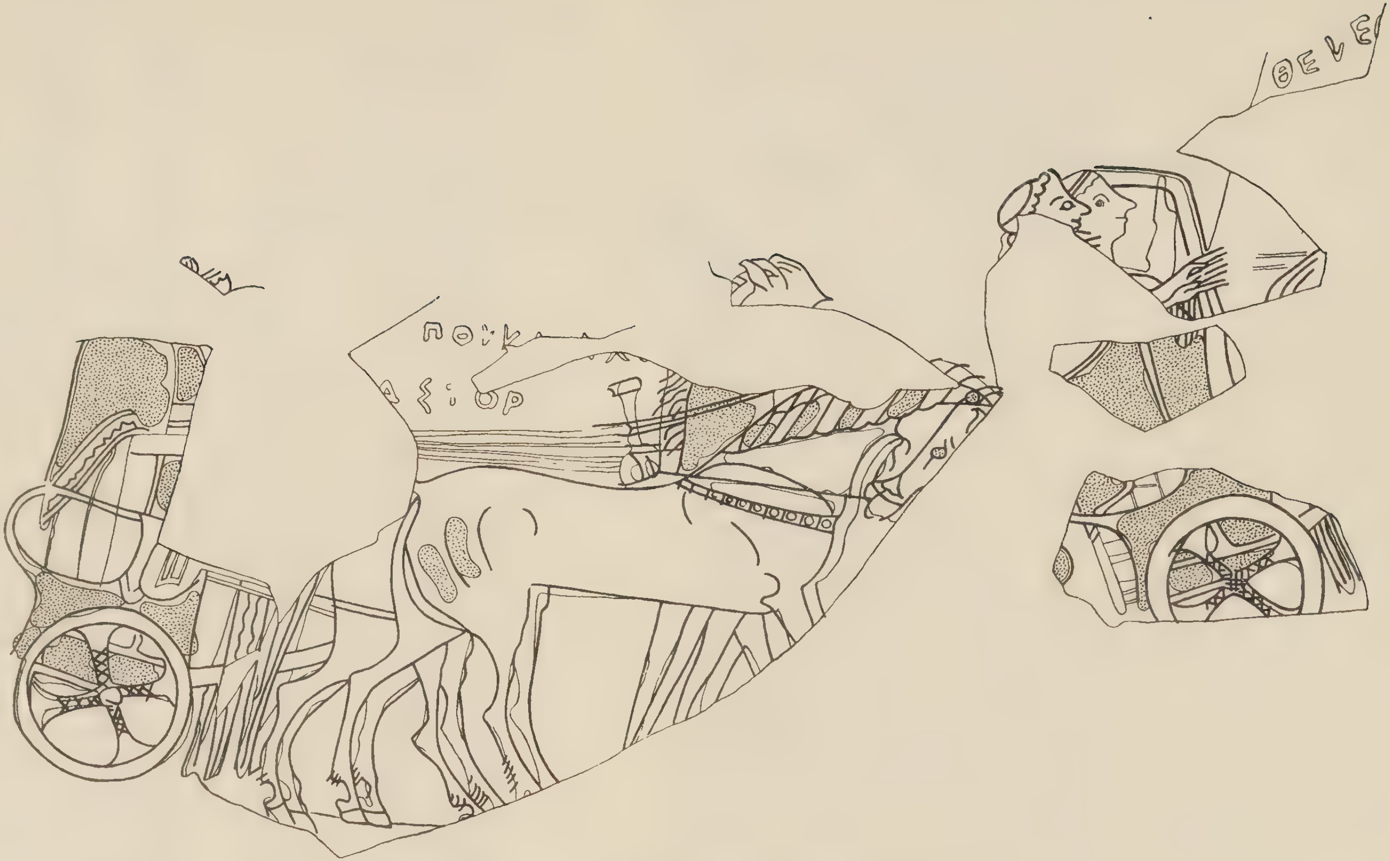


FIG. 3*a*. LEBES GAMIKOS NO. 1. THE FRONT SHOULDER SCENE (2:3)

of the friezes are of the vase's generation and family, though the sparseness of the filling ornament[21] shows that it is of that generation's end. This is one of the last of the large vases in the animal-frieze style to be made in Athens. At about the time it passed east to Smyrna the François Vase may have travelled west to Italy and already in Athens the new style which combined finesse with grandeur was established.[22]

The subject of the main scene on the shoulder of the vase is one appropriate to its shape: a wedding procession[23] (PLATE 32, FIG. 3*a*–*b*). It stands at the head of a long line of similar black-figure representations, and its forerunners can be seen in the Ares and Aphrodite chariot scene of a Naxian amphora of the last quarter of the seventh century,[24] some Melian vases,[25] the Aegina pyxis,[26] a Middle Corinthian crater with the scene of the marriage of Helen and Paris,[27] and Corinthian plaques representing Poseidon and Amphitrite;[28] akin are the chariot processions of guests on Sophilos' Akropolis dinos and the François Vase. On our vase we see Menelaus bringing his bride Helen to his home[29] with the escort of her brothers the Dioscuri and the benign presence of the baby siren[30] (if such it be between the chariots). The bride and her brothers are identified by the inscriptions,[31] but the name of her consort is missing and in view of her history his identity and the occasion requires explanation. If Menelaus, this could be his wedding, or his return from Egypt with Helen which in Euripides her brothers escort.[32] If not Menelaus, it could be either Theseus, in which case the Dioscuri should be in pursuit (hardly

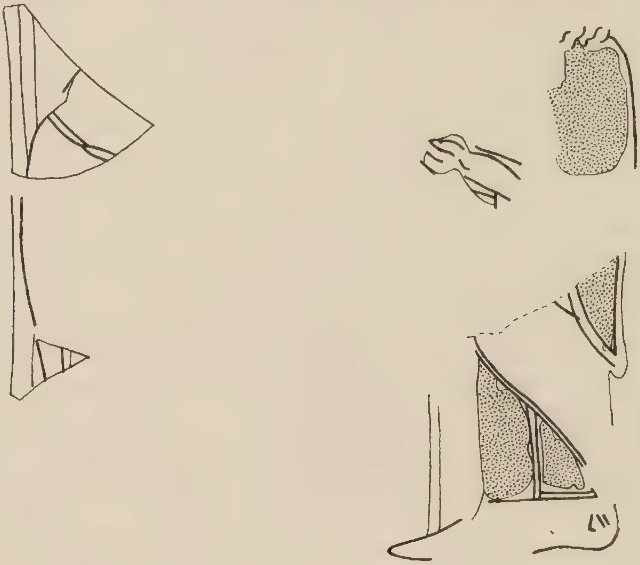


FIG. 3*b*. LEBES GAMIKOS NO. 1. THE UNDER-HANDLE FIGURES (2:3)

---

[21] A single rosette behind the siren in the second frieze (PLATE 31 right).

[22] Beazley, *Development* 19.

[23] On these scenes see J. Boardman, *BSA* xlvii (1952) 34 f., 39; M. Heidenreich, *MdI* v (1952) 134 ff.

[24] C. Karouzos, *JdI* lii (1937) 166 ff. (cf. *BSA* xlvii (1952) 26 n. 141).

[25] *BSA* xlvii (1952) 31 n. 174.

[26] W. Kraiker, *Aigina* no. 267, pls. 19 and C.

[27] Payne, *NC* 318, no. 1187, pl. 33, 5; cf. no. 1188.

[28] e.g. Berlin F 495, *AD* i, pl. 7, 1, K. A. Neugebauer, *Führer* pl. 15.

[29] A detailed study of these scenes appears in L. B. Ghali-Kahil, *Les Enlèvements et le retour d'Hélène*; and see Beazley, *Boston Vases* ii. 43 f.

[30] *BSA* xlvii (1952) 34 n. 218; ours may be perched on a tendril, cf. E. Buschor, *Die Musen des Jenseits* 31, fig. 21.

[31] Which are accurate, unlike most of Sophilos'. Note too the use of the four-stroke *sigma* where Sophilos used the three-stroke.

[32] *Helena* 1664 f.: σωτῆρε δ' ἡμεῖς σὼ κασιγνήτω διπλῶ | πόντον παριππεύοντε πέμψομεν πάτραν.

the situation here)[33] or Paris, as on the Corinthian crater, and with the Dioscuri abetting.[34] The main objection to the last alternatives is that the representation of anything other than a marriage scene, particularly if it might be a rape or the return of an errant wife, would be practically sacrilegious on a ritual vase intimately connected with marriage rites as this one is; the Corinthian crater with the marriage of Helen and Paris was designed rather for symposia. As it is, the example of the marriage of Helen and Menelaus seems unlikely to inspire confidence in the groom or conjugal patience in his bride;[35] in most Helen-and-Menelaus scenes the husband is in a warlike mood regaining his wife,[36] and such scenes do not appear on marriage vases. In later scenes of this type the attendant relatives are usually on foot, but the concession to the cavalier Dioscuri here is understandable.[37] Helen's gesture with her mantle, holding it ἄντα παρειάων is that usually employed by the bride in wedding scenes;[38] Sophilos' women hold theirs out from their shoulders and not over the head, but they are guests and not the bride whose modesty this better suits.[39] The figures under the handles may be simply onlookers, but in a similar position we might have expected women bearing torches. It is tempting to suppose that here the man facing the chariots at the right was holding a torch, as the messenger in Euripides' *Helen* reminds the couple later (lines 722–5):

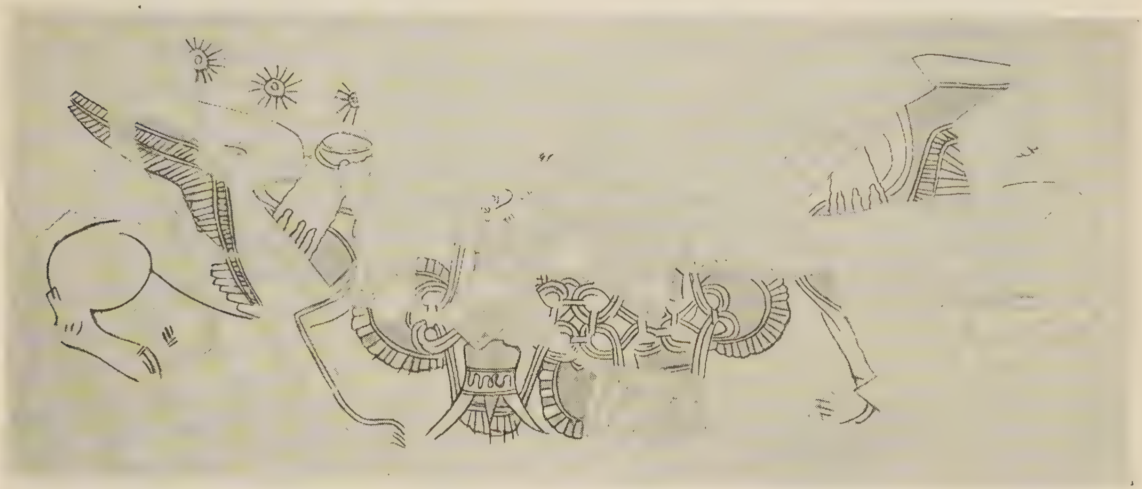


FIG. 4. LEBES GAMIKOS NO. 1. THE REAR SHOULDER SCENE (1:3)

νῦν ἀνανεοῦμαι τὸν σὸν ὑμέναιον πάλιν
καὶ λαμπάδων μεμνήμεθ' ἃς τετραόροις
ἵπποις τροχάζων παρέφερον· σὺ δ' ἐν δίφροις
ξὺν τῷδε νύμφη δῶμ' ἔλειπες ὄλβιον.

---

[33] *RE* s.v. 'Dioskuren' 1117 f.

[34] As they are so recorded by some, cf. Roscher, *Lexikon* s.v. 'Helena' 1937 ff.

[35] E. Haspels, *BCH* liv (1930) 442.

[36] Cf. C. Dugas, *BCH* lx (1936) 158 ff.

[37] In a chariot on Tarentine clay relief plaques, *RM* xv (1900) 23. See *ABV* 10 no. 28 for two youths again perhaps in a chariot.

[38] F. Studniczka, *Beiträge zur Geschichte der altgriechischen Tracht* 125 f. The gestures with the cloak held forward from the shoulder or over the head probably both suggest veiling —appropriate both for sorrow and for occasions on which the 'evil eye' was most to be avoided, quite apart from any motives of modesty or coquetry. F. Johansen, *Attic Grave Reliefs* 41, suggests exposure, or rather the disclosure of a beauty to be admired or mourned; this would be awkward when the cloak is drawn over the head, and beauties appreciate well enough the enhancement lent by partial veiling.

[39] Cf. *AM* lxii (1937) pl. 51.

This is the earliest extant and certainly identifiable representation of the Dioscuri in Greek art. Menelaus appears first on a seventh-century Attic stand in Berlin,[40] and Helen on the Corinthian crater mentioned above, and perhaps earlier.

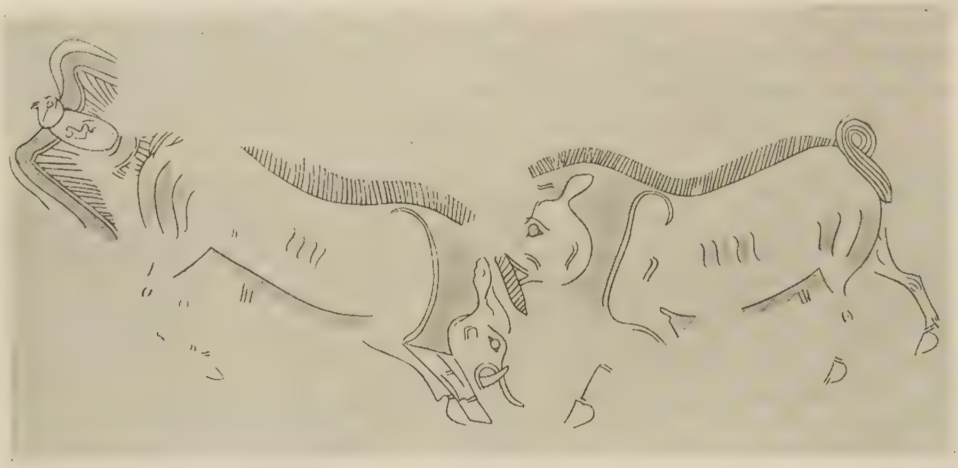


Fig. 5. Lebes gamikos no. 1. Detail of animals from the foot (1:3)

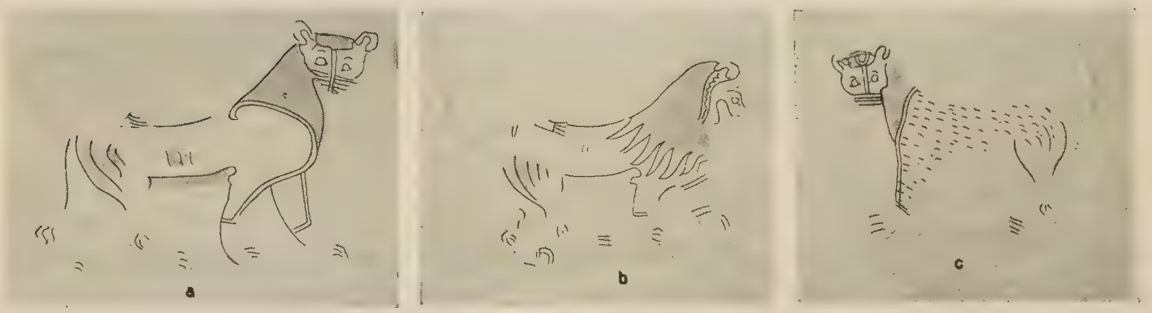


Fig. 6. Lebes gamikos no. 1. Animals from the body (1:3)

The vase is the earliest near-complete example of a black-figure lebes gamikos preserved. Its shape and details derive from no one seventh-century type but several. It clearly has much in common with the standard louteria of the type found at Menidi, one of which was painted by Sophilos, but the body of these vases reflects the dinos outline rather than the amphora.[41] The upright handles, the down-pointing rays at the bottom of the foot and the moulding at its top are found in the seventh century and continue on this shape into the fourth century.[42] The pierced holes at the top of the foot[43] serve no other purpose than to release the gases imprisoned in it during the firing, as a vase of this size could not easily be supported in the kiln. It would never have stood over a fire. The lip profile is no doubt derived from metal work and its decoration is commonly found on other shapes in this period.[44] Later lebetes gamikoi elaborate the lip moulding,[45] except for one or two examples with simple concave or straight profiles;[46] they are also often lidded, usually have double handles embellished with an added plastic lozenge, and are considerably smaller than the Smyrna vase, which is 70·0 high; only one other complete example stands more than 45·0 and this is a late vase heralding the exaggeratedly slim proportions of the red-figure vases.[47]

---

[40] *CVA* i, pl. 79.

[41] For references see D. M. Robinson in *AJA* xl (1936) 516 ff. and *Olynthus* xiii. 109; also J. Boardman, *BSA* xlvii (1952) 30 ff., where there is a brief discussion of the shape, its use, and black-figure examples (ibid. n. 177). Withdraw thence Akr. 1220, whose decoration is not appropriate and of whose profile not enough is left to admit the vase as an exception to the usual decoration of lebetes gamikoi, and the Menidi fragments, whose scale suggests an independent stand or, on the analogy of other finds there, a louterion (*ÖJh* xxix (1935) 130 f.); Louvre MNB 2042 is now published in *Nederlands Kunsthistorisch Jaarboek* v (1954) 128 f. (*ABV* 400, 696) and is better omitted also as it lacks a foot. Add Agora frr. P 6106, Akr. 474 (Graef pl. 17); one from H. Andreas in Attica (*JHS* lxxiv (1954) 148); Houston 34. 129, *ABV* 125, no. 32; a Swan Group miniature in Eleusis; and cf. *ABV* 80, no. 2. Of the same shape is a miniature in Reading, not Attic, and three Eretrian miniatures in Athens which have no figured decoration (*BSA* 52 (1958) pl. 7*a*–*c*). Kenner discusses the shape and its predecessors in *ÖJh* xxix (1935) 119 ff., and the Menidi louteria ibid. 130 ff. For the name compare further the λεβετίσκοι γαμικοί of *IG* ii².

Although its shape owes much to the grave louterion and its ancestors,[48] our vase and all succeeding lebetes gamikoi are associated only with marriage and regularly decorated with scenes of a wedding procession, at least in the black-figure period. One from the Kerameikos apparently bore mourning women,[49] but only in this example is reflected the marriage-death association illustrated by the decoration and use of the grave louterion and loutrophoros in the fifth century. At Athens and Eleusis[50] lebetes gamikoi and loutrophoroi are found as dedications, and both presumably commemorating a marriage or similar rite involving water-container and water-carrier. Neither are much exported,[51] particularly in the sixth century, being made to serve an Attic ritual, and it is only when the lebes gamikos becomes merely another wedding present that the market expands. The appearance of one in Smyrna at this early date suggests that it arrived for some purpose, not simply as an *objet d'art*. It is tempting to suppose that it formed part of an Athenian girl's 'bottom drawer' and was taken to Smyrna by her for her marriage. It was found near the hearth of the main room of a house which had been suddenly destroyed by fire,[52] not part of a general conflagration, and the pieces, all of which lay together, seemed not to have fallen from an upper story. Around were various iron cooking utensils, a bronze bowl, loom-weights, and other household objects. Such a large vase would hardly stand in the centre of the room normally and could never have stood on the fire. The probable use of a lebes gamikos is to

---

1424a. 147, and note the κανᾶ νυμφικὰ ibid. 144; these, with the λέβης γαμικὸς and νυμφικὸς of other inscriptions are surely the standless lebetes and flat baskets so commonly carried in wedding scenes (*BSA* xlvii (1952) 31 n. 178, 39). The name remains appropriate, though probably inaccurate, for the clay vases.

[42] Cf. *CVA* Berlin i *passim*; *AA* 1943, 412 f.; the Nessos Painter skyphos-crater from Vari, *BCH* lxiii (1939) pls. 49, 51; the Gorgon Painter fragments Akr. 474, Graef pl. 17, where the scene is of a frontal chariot as on a fragmentary 'lebes gamikos' in Eleusis (*ABV* 87 no. 20), and cf. Akr. 472 (*AM* lxii (1937) pl. 56) in his manner, and the KX Painter's Athens NM 16183 (*JdI* xviii (1903) 137, fig. 9).

[43] On black-figured lebetes gamikoi they are usually triangular or tear-shaped, not round, cf. the Vlasto vase, Agora P 7897, *AJA* xl (1936) 412; London B 298, Richter and Milne, *Shapes and Names* fig. 72; *EADélos* x pl. 48, 594; Akr. 1213.

[44] Metal influence in hydria lips, Payne, *NC* 212 ff. For the profile cf. *Boll. d'Arte* 1951, 101 ff. (Sophilos), *Hesperia* xiii (1944) pl. 8, 1 (near Sophilos) and Eleusis 767 (*JDI* xviii (1903) 148 fig. 14, *ABV* 21). Decoration and profile appear in Attic on *Hesperia* xv (1946) pl. 17, 1, and mid-sixth-century Eretrian burial amphorae whose shape and decoration reflect those of the Attic lebetes gamikoi, *BSA* xlvii (1952) pls. 9, 10.

[45] e.g. Petit Palais 309, *CVA* pl. 649, 1–4.

[46] e.g. *EADélos* x, pl. 48, 594. Cf. Athens NM 913, Collignon-Couve no. 654, pl. 27.

[47] *EADélos* loc. cit., and cf. red-figured examples *AM* xxxii (1907) 96, fig. 10.

[48] H. Kenner, *ÖJh* xxix (1935) 152.

[49] *JdI* lxi/lxii (1946–7) pl. 23, 78–79. The distraught women are not actually tearing their hair as is usual, but grief rather than joy seems the keynote. Red-figure lebetes gamikoi are found in graves in Attica (cf. D. M. Robinson *AJA* xxxvi (1932) 407, xl 507 n. 3 but note Beazley, *JHS* lviii (1938) 267), but they bear marriage scenes and their connexion with the dead may have been suggested by the loutrophoroi whose dual role Kenner explains, op. cit. 147 ff.; their primary purpose in this case is not funerary.

[50] Akr. 1206, 1207, 1209–11, 1213, 1214. Eleusis, *PAE* 1937, 51, and unpublished fragments.

[51] Cf. G. M. A. Richter, *BSA* xi (1904–5) 230 ff. One lebes gamikos in the Delos Heraion (above n. 46; of about 510 and without any figure decoration).

[52] Trench C: Burnt House.

hold the water which has been carried from the spring (Enneakrounos in Athens[53]) for the bridal bath. The water would be warmed, and on a red-figure lebes gamikos[54] the vase is shown wrapped in a rug, presumably to keep the water warm.[55] Might it be that our vase stood by the fire for the same purpose when the carelessness of a δᾳδοῦχος interrupted the nuptial preparations? But at this point speculation from the evidence leads to idle fancy.

Amphorae and hydriae

2. Fragments of body. PLATE 33. Part of two lions with incised rosettes in the field; the band below is of dots within lines (cf. the Sophilos vase, *AM* lxii (1937) pl. 62). Red manes, belly panels, rib lines on the left-hand lion (his companion is ribless), and on the rear haunch. The incision at the right on the back of the right-hand lion is the tip of his tail. The vase is to be dated with the Gorgon Painter's later work and is in his manner. The separate underlock of the mane on the back is his (cf. ibid. pl. 65), but the deep box-like belly, and haunch, back and leg markings are less familiar. 590–580. See p. 29 for find-place.

3. Fragment of body. PLATE 34. Perhaps from a hydria. A draped male figure is standing facing right; white dots adorn his collar. 550–540.

4. Fragment of body. PLATE 34. The rear legs of four horses from a chariot scene, and below them a frieze of linked buds. Last quarter of the sixth century.

5. Amphora neck fragment. PLATE 33. A black convex lip above a linked chain of palmette and lotus, with red hearts to the palmettes and white dots around the hearts and in the links. There are red lines at the tip and base of the lip, the inside of which is painted nearly to the bottom of the sherd. Late sixth century.

6. Amphora neck fragment. PLATE 33. A light ridge at the top of the sherd is painted red; a spindly palmette and simplified lotus below and two lines to the left. Painted half-way down the inside. About 500.

Craters

7. Fragments of shoulder from a crater or dinos. PLATE 33. The torso of a dancing komast holding a drinking-horn. Komast Group (Beazley, *ABV* 680, KY Painter no. 3 *bis*). The double neck-line is not familiar to me on the KY Painter's work, and although the KX Painter's dancers are more often naked they do sometimes wear jerkins of this type (cf. Beazley, *Development* pl. 7, 3): the quality of the painting is also perhaps nearer his, and that he decorated vases of this size can be inferred from his stand *JdI* xviii (1903) 137, fig. 9. The stance is odd: he is dancing (his left leg is raised) but his arms are held cautiously close to his sides; his horn is perhaps full. About 570.

8. A fragment of the rim and handle plate of a column crater. PLATE 35. Black rays on the rim and from the handle plate part of the sickle wing of a siren or sphinx. The neck of the vase was painted. Second quarter of the sixth century. Trench C: Burnt House floor.

9. Fragment of shoulder. PLATE 34. Below an alternate black and red tongue frieze is the raised head of a deer; its neck was red. The creature was perhaps being attacked by a lion. Very like Lydos (Beazley, *ABV* 685), but there is little to compare other than the smaller figures of *MMStud* iv. 172 f., figs. 3, 4, and compare the animals ibid. 170, fig. 1 and A. Rumpf, *Sakonides* pls. 7*c*, 12*c*, noting the flecks at the base of the horses' ears. Around 540. Trench H: Megaron.

10. Fragment of body. PLATE 33. The body of a grazing animal. The border above is a red line and red appears on alternate ribs of the beast. Cf. A. Rumpf, *Sakonides* pl. 3. 560–550. Trench C: Burnt House floor.

11. Fragment of shoulder. PLATE 34. Below an alternate red and black tongue frieze the helmet of a warrior. Red head-piece and plume with a white base stripe. Cf. A. Rumpf, *Sakonides* pl. 7*a*. Mid-sixth century. Trench H: Megaron floor.

12. Fragment of body. PLATE 33. The rear part of four horses drawing a chariot. Beneath their bellies at the right appears the shield rim and two spears of a warrior beyond. Poor glaze: red on the horse's tail. Cf. Würzburg 267 (Langlotz, pl. 76) and for the type of scene Villa Giulia 14216 (*CVA* i, pl. 5, 4), both of these vases being in the manner of the Lysippides Painter (*ABV* 257f.). Last quarter of the sixth century.

13. Fragments of the rims of column craters (one illustrated). PLATE 33. On the top broad unlinked buds and on the face ivy leaves flanking a line.

Lekanai

14. Fragment of handle, lip, and body. PLATE 34. Under the handle a rosette with alternate red petals and red heart. Below are the antlers, ear, and shoulder of a grazing stag, its shoulder red. Red bands run at the top of the rim and inside the flange for the lid; two thin red stripes appear in the bowl. By the KX Painter (Beazley, *ABV* 680, KX Painter no. 4 *bis*). Cf. no **15** and *Hesperia* xiii (1944) pl. 5, 1. About 570. Trench C: outside the Burnt House.

---

[53] Thuc. ii. 15.

[54] Athens NM 1252 (*ARV* 706, *AM* xxxii (1907) 98 n. 2); no published illustration.

[55] The excavators noted traces of a matting impression on the earth adhering to the sherds of this vase; most likely from some floor covering.

15. Fragment of body. PLATE 34. The antlers and shoulder of a grazing stag and the head of a lion. Red on the stag's neck and the lion's forelock, muzzle, and eye. By the KX Painter (Beazley, *ABV* 27, no. 33). Cf. Payne, *NC* pl. 52, 2 for the head. 580–570.

16. Fragment of body. PLATE 34. From the rim part of the rosette frieze (red alternate petals). On the body a male bearded siren with outstretched wings (red with alternate red feathers) and wearing a red fillet; before him is the chest of a lion with head reverted, its mane red; there are incised rosettes in the field. The paint inside has fired red. Such male sirens are unusual in Attic black-figure, see G. Weicker *Der Seelenvogel* 156 ff., and S. Karouzou, *AM* lxii (1937) 128 n. 1. By the Painter of the Dresden Lekane (Beazley, *ABV* 680, Group of the Dresden Lekane no. 1 *bis*); cf. our siren's sisters on Akr. 496 (Graef pl. 20) and the Dresden vase (*AA* 1925, 106, fig. 6); the wings, however, are usually two-piece. About 580.

17. Fragments of body. PLATE 34. The fabric is pale, a characteristic of several of the same painter's vases (Payne, *NC* 201). Above the rays at the base is a double row of dots in lines and the legs of a lion and a boar. There is a red line within. By the Painter of the Dresden Lekane (Beazley, op. cit. no. 1 *ter*).

18. Fragment of the lid of a lekane. PLATE 34. A panther to the left. The back of the sherd is painted and carries two red lines. The animal is a cousin of those on the New York Lydos crater's lip (A. Rumpf, *Sakonides* pl. 23). Little before 550.

19. Fragment of lip and body. PLATE 34. On the lip a running-dog pattern and in the handle zone heart-shaped blobs (debased birds or rosettes?) and dots. A red band at the top of the rim and inside the flange for the lid. Mid-sixth century.

20. Fragment of lip and body. PLATE 34. A red band on the lip, below it alternate red and black tongues with white dots between their tips. The lower part of the body is painted as is the bowl, within which are two thin red lines, one near the rim and another two-thirds of the way down. For tongues in this position see *JdI* xviii (1903) 133, fig. 6 (A. Rumpf, *Sakonides* 25, no. 38); *JdI* lxi/lxii (1946–7) pl. 7, 21; *SE* xx (1948–9) pl. 4, 2; Brussels *CVA* i, pl. 13, 2; Petit Palais, *CVA* pl. 646, 5.

21. Fragment of the lip and body. FIG. 11. Diameter at the rim 11·0. A heavy ribbon handle; there is no flange for a lid. Late sixth century.

Lids

22. Amphora lid fragment. PLATE 34. Diameter 22·0. Rays with a red line at their tips. The flat part of the lip is slightly offset; above it is a red line and on it a red line flanked by ivy leaves. Unpainted below, where there is a flange 1·5 deep set 3·0 from the edge. Cf. Brussels *CVA* iii, pl. 118, 1–4.

23. Pyxis lid fragment. PLATE 34. Diameter 11·4. Rays and three groups of two red lines. Painted beneath but for the resting surface and a central circle. The profile curves down sharply at the edge, the extremity of which is slightly turned out.

24. Amphora lid fragment. PLATE 34. Rays and alternate black and red tongues. Not painted beneath, where part only of the flange is preserved. Cf. Brussels, *CVA* i, pl. 13, 2.

Plate

25. Fragment with the rim broken away. PLATE 33. Diameter without rim 8·0: thickness at centre 1·2, at edge 0·9. The underside is flat and painted with three broad circles (cf. Robinson Collection, *CVA* i, pl. 152, 1). A running female figure and beside her a dog. Red in the scale pattern of the skirt and on the dog's neck, belly, ribs, and haunches: white on the legs.

The plate is by Lydos, or at least very like his work (Beazley, *ABV* 685, Lydos α ii, no. 3 *bis*). The skirt hem, scale pattern (cf. Akr. 2410, Graef-Langlotz pls. 97, 98), knee, shin, and ankle markings are all typical of the painter's style. He was fond of drawing dogs, but he does not elsewhere give them a belly panel as here. What the incision lacks here and there in precision is compensated by the painting (one of his best dogs) and the force of the composition. It is one of the many 'running-figure' plates of this period, for example that in the Robinson Collection mentioned above, and Akr. 2418 (Graef-Langlotz pl. 98). About 550.

Siana Cups and akin

26. Fragmentary cup. FIG. 7. Height 12·2: the handles are missing. An ST cup (on the name see B. B. Shefton in *Perachora* ii: he kindly communicated to me his remarks on this group). Its immediate antecedents are Attic of the Komast Group but remoter ancestry Ionic, which may also have influenced the choice of plain striped decoration for the shape in this period. Cf. Munich 492 (Sieveking-Hackl pl. 18) and the decorated Copenhagen cup (*CVA* ii, pl. 93, 5) by the Painter of Athens 533, whose cups have elaborate underfoot painting similar to ours, which must be from the same workshop. On these cups see now C. M. Robertson, *AE* 1953–4, ii. 145–8. 560–550. Several other fragments of similar cups are preserved.

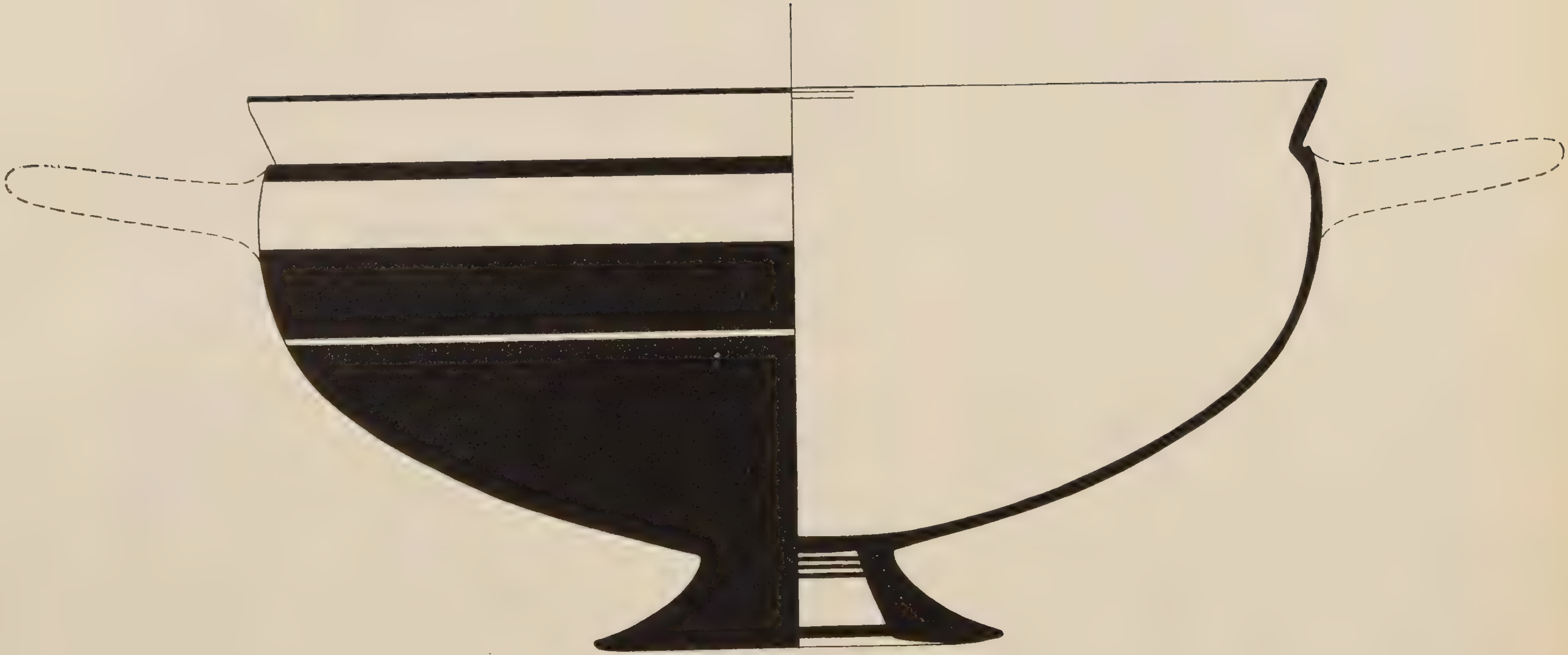


FIG. 7. SECTION OF CUP NO. **26** (1:2)

27. Fragment of body. PLATE 35. The pursuit of Troilos. The youth's horse gallops to the right, the second horse beyond leading by a head; the elbow and part of her body is all preserved of Polyxena who heads the field, and the pursuing Achilles is missing. The girl wears a chiton, the stitched sleeve of which is clearly drawn. Red on the first horse's neck, the second's mane, Polyxena's dress, and the openings of her sleeve; white on the body of the second horse and Polyxena's arm. On such scenes see M. Heidenreich in *MdI* iv (1951) 103–19 and cf. the Xenokles lip cup (J. C. Hoppin, *Handbook of Black Figure Vases* 431). Fine style of little before 550.

28. Fragments of lip and body: the vase had been mended in antiquity. PLATE 35. On the lip a myrtle wreath and in the handle zone linked palmettes with red hearts: lower on the bowl four thin lines in a reserved band. The palmette chain is exactly like that on New York 12.234.2 (*CVA* New York, ii, pl. 4) and their combination with this lip pattern is as that of Naples 2454 (Beazley, *ABV* 60, related to the C Painter no. 5): cf. also a fragment from Perachora and Louvre C 10241. Around 560.

29. Fragment of body. PLATE 35. On the outside (not illustrated) are three thin lines in a reserved band; in the inner tondo is a whirligig. The crescents are outline-incised with a compass and alternately red and black with one reserved between; encircling them are bands of chevrons, stemless leaves, and teeth. By the Heidelberg Painter (Beazley, *ABV* 682, Heidelberg Painter no. 22 *bis*), whose pattern on the Copenhagen cup (*CVA* iii, pl. 115, 3, *ABV* 64) is almost identical; another is Athens NM 435 (*ABV* 65). About 550: Temple Pylon, above burnt layer.

30. Fragment of lip and body. PLATE 35. The lip is painted black and there is a black line at the top of the handle zone. The head and shoulders of a ram with red on the neck, and white horn, belly, and patches on the body. Compare the colouring of the Tleson Painter's animals on lip cups (Hoppin, op. cit. 372, 377, 379); his rams, however, are below standard, as Beazley remarks (*JHS* lii (1932) 195, cf. Louvre *CVA* ix, pl. 625, 8). Cf. too the Kavalla fragments (*AE* 1938, 144, fig. 19, 3–4). About 560. Trench C: Burnt House floor.

31. Fragment of lip and body. PLATE 35. I know this piece only from its photograph as it is now missing. Its lip is black and there appears to be a black line near the top of the handle zone. The body of a grazing doe (goats' tails turn up and rams' are longer). White patches on its shoulder and rump: red on the neck and haunch. Cf. no. **30.**

32. Fragment of lip. PLATE 35. A row of stalkless ivy leaves on either side of two lines. Possibly not Attic.

33. Fragment of body. PLATE 35. Bands of alternate red and black tongues from the outside of the lower body. Cf. the more carefully painted vases in the British Museum (*CVA* ii, pl. 68, 2, 6). Trench C: Burnt House.

34. Fragment of body. PLATE 35. From the inner tondo border the ends of red and black tongues, their box ends neatly rounded: outside them a double dot row.

Lip Cups

35. Fragment of lip. PLATE 35. A grazing deer to the left with red neck and stripe on the ribs and white belly line and throat. By the Tleson Painter (Beazley, *ABV* 688, Tleson Painter no. 23 *bis*). Cf. Cab. des Méd. 317, *CVA* i, pl. 331, 7, Poland *CVA* iii, pl. 113, 5, and *CVA* New York, ii, pl. 8, 9*b*. Around 550.

36. Fragment of body. PLATE 35. A siren in the inner tondo which is edged by an alternate black and red tongue border. The red band on the wing is edged with white, there are white dots at the feather ends, and white on the body on which a light feather pattern is incised; relief line between the tongues. Near the Tleson Painter. For the figure compare his vases cited in *JHS* lii (1932) 176, the feather tip dots Hoppin, op. cit. 376, his love of white ibid. 387; a white siren not by him in British Museum, *CVA* ii, pl. 80, 4*a*. But he usually rounds off the ends to the boxes of the tongues (not always, ibid. pl. 72, 5) and his coloured wing bands are regularly white in red, not red in white. For similar wing colouring and the feather pattern see Beazley, *Raccolta Guglielmi* pl. 21, 61; Louvre A 241, *CVA* ix, pl. 632, 3; Munich 2243, *FR* pl. 153, 1 (Archikles and Glaukytes), and others. Around 550.

37. Fragment of body. PLATE 36. From the inner tondo border the tips of red and black tongues with a white dot between them on the wavy line rounding the ends of their boxes.

Band Cups

38. Fragment of body. PLATE 35. The leg and tail of a satyr moving left and behind him the leg of a clothed man following, probably Dionysos. White on the drapery. A fine miniaturist style very reminiscent of the Amasis Painter's band cups (cf. Louvre, *CVA* ix, pl. 622, 3–10; Beazley, *ABV* 688). Note the two-stroke knee-cap on most of his smaller figures, Beazley, *JHS* li (1931) 274. Little before 550.

39. Fragment of body. PLATE 36. In the foreground the back of a warrior moving left, his right hand raised: the red at the left of the fragment is his shield rim and the white designs on the shoulder flaps of his corslet represent panther heads (cf. *BSA* xlvii (1952) 37, pl. 11*b*; the Amasis Painter's vase, Adamek pl. 1; and the Vatican amphora by Exekias, Albizzati pl. 41); white dots edge his belt. Beyond him another warrior moves right; all we have of him is his shield (the red rim at the top and bottom of the sherd) and his left arm passing through the white arm and hand grips. From a large band cup like the Glaukytes vase, London B 400 (*CVA* ii, p. 76, 1).

40. Fragment of body. PLATE 36. A naked youth to the right and before him a woman holding a wreath (four dots) and the raised elbow of a man carrying a spear. Red on the woman's clothes and white on her flesh. Around 530.

41. Fragment of body. PLATE 36. A raised male hand before a man facing left. Red on his cloak and white on its overfall; cf. Louvre *CVA* ix, pl. 623, 5. Around 530. Trench H: Megaron floor.

42. Fragment of body. PLATE 35. Love-making. The man has red hair, the woman a white body with incised detail including a bracelet. A line of dots appears above the woman's back and part of one at the break before her arms. Close is Würzburg 400 (Langlotz pl. 111) and for the motif on band cups cf. ibid. pl. 112, 401, Akr. 1639, 1669, 1684, 1685 (Graef-Langlotz, pl. 85), Beazley, *Raccolta Guglielmi* pls. 20, 21, no. 64, Berlin 1798 (H. Licht, *Sittengeschichte Griechenlands* iii. 74 f.) and fragments in Aegina. Third quarter of the sixth century.

43. Fragment of body. PLATE 36. By the handle palmette a man and the tail and wing tip of a siren. Red on the palmette heart and the man's cloak which has a white overfall (cf. no. **41**). Cf. Würzburg 398 (Langlotz, pl. 111) for the grouping and Beazley, op. cit. 56 f. pls. 20, 21, no 63. Around 530.

44. Fragment of lip and body. PLATE 35. The head of a panther to the left; another fragment of the same vase bears the ear of another panther. Red on the forehead. Compare the animal on Louvre A 479 (*CVA* ix, pl. 633, 8, Amasis Painter). Careful work of soon after 550.

45. Fragment of body. PLATE 35. The head and fore foot of a goat in a fine miniature style. Cf. the rams on fragments from Kavalla (see no. **30**). Around 550.

46. Fragment of body. PLATE 35. The face and shoulder of a sphinx to the right.

47. Fragment of body. PLATE 36. A swan with outstretched wings on which are red bands. Soon after 550.

48. Fragments of bodies. PLATE 36. Band cups with assorted animals in the style current on this shape about 530–510. Two are illustrated figuring a deer and feline, a goat and another animal. The upper is from Trench H: Megaron.

49. Fragment from the body of a lip or band cup. PLATE 36. Part of the handle palmette and the inscription τλ[εσ̣ονͱονεαρχοεποιεσεν] (Beazley, *ABV* 182, no. 27).

50. Fragment of lip and body. PLATE 36. From the handle zone, plain but for the palmette, the letters κ̣ο . . . . The upper part of the *kappa* is missing but this seems the only possible restoration, although no name of a known potter who made lip or band cups fits here: but it need not be part of a name, or even make sense (*JHS* lii (1932) 194 f.).

51. Fragment from a lip or band cup. PLATE 36. A careful palmette from beside the handle, with red alternate leaves and heart, and white dots in the band around the latter.

52. Foot of a cup of indeterminate type. PLATE 36. Diameter at base 5·2. Poor glaze on the rough outer surface which bears clear finger grooves. The flat part of the foot which is illustrated carries three groups of two thin lines and the hollow centre cone is unpainted. An unusual schema for the decoration beneath, where one, three, one is the usual grouping (Beazley, *JHS* lii (1932) 168, 185). It may well not be Attic. Cf. the decoration beneath the foot of the Boeotian kantharos in P. N. Ure, *Black Glaze Pottery from Rhitsona* pl. vii, 50. 266; and the Ionian cup, *JHS* lx (1940), pl. 1, *o*.

Droop Cups. On these see P. N. Ure in *JHS* lii (1932) 55–71 and *Studies Presented to D. M. Robinson* ii. 45 ff. The floruit of the class was from about 540 to 510. A thin reserved band appears below the top of the rim within.

53. Fragment of lip and body. PLATE 35. By the handle palmette a naked youth with a spear, before him a bearded man in himation with a spear, a woman with her himation drawn over her head and a warrior striding and striking to the right. Dots (mock inscriptions) in the field and a hanging wreath. Below the scene are four thin lines, a red band, and four thin lines on either side of a reserved leaf pattern. Red on alternate palmette leaves and heart, hair, drapery, and helmet; white dots around the palmette heart, on the man's himation, the woman's face and feet. The vase had been mended in antiquity. Ure's Type III C of the group *JHS* lii (1932) 64 ff., nos. 85–90. Under the handles may have been a blossom (Ure no. 86) but cf. the panther's tail on Ure no. 88. Our fragment is, for Droop cups, well painted, and for this perhaps closer to Ure no. 107 (*JHS* xxx (1910) 22, fig. 9*c*) or *JHS* xlix (1929) pl. 16, 13 (Painter of Louvre F 28; Beazley, *ABV* 199) which is also a close parallel for the scene, than to the group mentioned above. Around 540.

54. Fragments of lip and body. PLATE 36. In the handle zone a cross-linked lotus and bud frieze with dots; below, alternate broad bands and groups of three thin lines. Ure's Type I D.

55. Fragments of body. PLATE 36. In the handle zone a cross-linked lotus and bud frieze with carelessly placed dots; below, four thin lines on either side of a band and perhaps the tips of an ivy-wreath band. Ure's Type I C, cf. *JHS* xxx (1910) 26, fig. 12*a*.

56. Fragment of body. PLATE 36. Reserved bands, one bearing two thin lines. On a black band a wavy line in white. Related to Droop cup patterns as Ure's Type D.

57. Fragment of body. PLATE 36. A net pattern of black dots with white dots between them: lower, a reserved band. Related to Droop cups cf. Ure, *JHS* lii (1932) 68 f., fig. 9 and the pattern on fig. 11, and *Hesperia* ix (1940) 205, fig. 34 no. 153.

Cassel Cups. On these see *CVA* New York, ii. 12. Contemporary with and decoratively akin to Droop cups. The range in date of our fragments is the decades before and after 530. A reserved stripe regularly at the top of the lip within.

58. Fragment of lip. PLATE 36. Black tongues on the lip and a laurel wreath below. Cf. *AE* 1938, 148, fig. 23, 3.

59. Fragments of lip and body. PLATE 36. Alternate black and red tongues from the lip; in the handle zone an ivy wreath of alternate red and black leaves. Cf. *CVA* New York, ii, pl. 20, 33.

60. Fragment of lip and body. PLATE 36. A black lip above a laurel wreath. For the type with plain lip cf. *AA* 1913, 205, fig. 53.

61. Fragment of body. PLATE 36. Black around the stem, a white line, rays, dashes and a laurel wreath. Within, the reserved tondo has a dot and small circle in it. Cf. *Clara Rhodos* iv. 81, fig. 60, 2.

62. Fragment of body. PLATE 36. A laurel wreath above rays. Cf. P. Mingazzini, *Collezione Castellani* pl. 92, 5.

63. Fragment of body. PLATE 36. Rays and a linked dot band. Cf. *AE* 1938, 148 f., fig. 23, 23*a*.

Floral Band Cups. On these see G. M. A. Richter, *CVA* New York, ii. 11; F. Villard, *REA* xlviii. 169 ff. No. **64** is early with its plump bud. The side sepals of the lotuses which alternate with the palmettes later join their fellows to make a separate arc girding the intervening palmettes (nos. **65**, **66**). The central member of the lotus outlives its sepals and becomes a straight line or leaf (nos. **67**, **68**). Colour and incision ultimately disappear (no. **69**) and the palmette goes the way of the lotus, its leaves separate, blunted, and spindly (nos. **70**–**72**). Most are of the last quarter of the sixth century; earlier is no. **64**, later nos. **69**–**72**.

64. Fragment of lip and body. PLATE 36. The bud and palmette chain may have been double. White tips to the buds and red alternate leaves on the palmettes. Around 530.

65. Three fragments of body. PLATE 36. Black girding lines to the palmettes, which have red alternate leaves and hearts and white dots circling the heart. Another fragment of a similar vase (not illustrated) lacks the white dot elaboration.

66. Fragment of lip and body. PLATE 36. Pale fabric. An unusual schema. In place of the usual links at the base of the chain are white dots. The girding arcs to the palmettes are in white and on either side of the head of the black lotus is a white dash, perhaps intended to represent a leaf. Two reserved bands below the frieze.

67. Fragment of body. PLATE 36. White dots in the centre of the links. Red alternate leaves in the palmette and its heart, which is enclosed by two incised lines.

68. Fragment of lip and body. PLATE 36. As no. **67**, but the palmettte heart is enclosed by a single incised line and the dots in the links are black. Trench C: Rhyton Pit. Fragments of seven other vases of this type were found.

69. Fragment of body. PLATE 36. Palmettes of five blunted leaves: the lotus is a red stripe on the ground. There are white dots in the links. After 500.

70. Fragments of lip and body. PLATE 36. As no. **69.** The tips of the red lotuses are cut off.

71. Handle and part of lip and body. PLATE 36. Not a true band cup: the lip is neither black nor everted. Blunted palmette leaves, the central ones, like the now unrecognizable lotus, having a diamond-shaped top. White dots in the links, on one lotus and at the handle base. Cf. Copenhagen *CVA* iii, pl. 120, 6.

72. Fragment of body. PLATE 36. Spindly palmettes with five leaves, and simple lotus. No colour.

Eye Cups and akin. See G. M. A. Richter, *CVA* New York, ii. 14 ff. and F. Villard in *CVA* Louvre, x, for ample illustration and references. Most of our fragments are of the last quarter of the sixth century, most late in it, some perhaps from the opening decade of the fifth, though the latest material from the Agora Rectangular Rock-cut Shaft (E. Vanderpool, *Hesperia* xv (1946) 265 ff. is down to 480) seems not represented. The background of many of the later fragments is poor and streaky: all have a reserved line inside the lip at the top.

73. Fragments of lip and body from either side of the cup. PLATE 37. The foot and handles are missing. On *A* a standing youth in a himation holding a spear and before him a naked companion with a spear, gesticulating: a youth, naked but for his fillet, is putting on his greaves, his Corinthian helmet on the ground beside him: facing him is a woman holding his two spears and a shield bearing a tripod device: behind her is a youth naked but for his himation worn as a stole and holding a spear. On *B* part of four figures similar to those on *A*, but note that the woman seems not to be holding the spears. Large palmettes flank the handles, beneath which were blossoms (the tip of a sepal visible to the left on *B*). Within is a plain tondo the edge of which is decorated, or rather disfigured by roughly scratched crosses, red on the subsidiary palmettes' alternate leaves and centre, himatia, hair, fillet, and a dot near the hem of the woman's skirt on *B*: white dots round the hearts of the subsidiary palmettes, dots on drapery, diagonal lines on the woman's skirt on *A*, her face and feet and the shield device.

The scene may be the Arming of Achilles (cf. D. von Bothmer, *BMFA* xlvii (1949) 84 ff.); greaves are donned first (Homer *Iliad* iii. 330, &c.). The drawing is close to that of the Painter of Louvre F 28, whose New York cup (*CVA* ii, pl. 22) is earlier than ours: we miss too his red nipples and round knee-caps, but our cup could be later work of his approaching 530 in date. Compare too Munich J. 506 (J. Davreux, *La Légende de la prophétesse Cassandre* fig. 40). The shape is also nearer the canonical eye cup than the New York vase. Such handle palmettes are not very common on cups (e.g. *CVA* Louvre, x, pl. 729) and the heart of the main palmette regularly holds a dot, unlike ours, which is empty. Trench H: Pit 6.

74. Fragment of handle and body. PLATE 38. From the inside, part of a palmette. It is most unusual to find such a palmette tondo border but cf. *Mél. d'Arch. et d'Hist.* lxv (1953) pl. 9. Early fifth century.

75. Fragment of lip. PLATE 38. A rider to the right; vine branches in the field. White on the cloak and in dots on the pelta (hanging at the rider's back) and horse; a red centre stripe on the cloak and red mane. A red line runs above the scene. By the same hand Akr. 2046, 2048 (Graef-Langlotz pl. 90), cf. Akr. 1356 (ibid. pl. 77). Beazley, *ABV* 713, Leafless Group no. 176 *bis*.

76. Fragment of lip. PLATE 38. A woman to the right; vine branches in the field. White face, red dots on the dress and a red line above the scene. Leafless Group.

77. Fragment of lip. PLATE 38. A shield or perhaps the shoulder of an animal to the left: vine branches in the field. White details and a red line above the scene. Leafless Group.

78. Fragments of body. PLATE 38. Dancing men and the legs of a horse; branches in the field. Leafless Group.

79. Fragments of lips and bodies. FIG. 8. Fragments of different vases: the ground line for the figures is in thinned paint and there is a red line above the scene. Figured are eyes (*a*)–(*d*), an under-handle ivy-leaf pattern (*e*), the foot of a draped figure (*f*), and four fragments from one vase (*g*) with satyr's legs, a donkey with a white belly stripe, an under-handle dolphin and tondo as nos. **84**–**86**: vine branches in the field. Cf. *CVA* Louvre, x, pls. 747–54 *passim*. Beazley, *ABV* 712 f., Leafless Group nos. 55 *bis*, 132 *bis* (this is our fragments g), 209 *bis* and *ter*.

80. Fragment of body. PLATE 38. A dancing satyr to the right carrying a white fillet; vine branches in the field. Leafless Group ibid. no 139 *bis*.

81. Base and tondo only. PLATE 38. Height 2·2. Gorgoneion. No preserved colour or incision.

82. Base and tondo only. PLATE 38. Height 1·9. Gorgoneion. Red tongue, white for teeth and fangs. Temenos: in chip stratum.

83. Base and tondo only. PLATE 38. Height 2·2. Gorgoneion. Red hair, pupils, and tongue; white teeth and fangs. The profile of this and nos. **81** and **82** is as H. Bloesch, *Formen attischer Schalen* 115 f., pl. 32, 3 with a red band below the bowl.

84. Base and tondo only. PLATE 38. Height 4·5. A dancing man with head turned back. Foot profile as *CVA* Louvre, x, pl. 750, 1, 6. Beazley *ABV* 713, Leafless Group, no. 210 *bis* (Painter of Brussels R 245).

85. Base and tondo only. PLATE 38. Height 4·1. In the tondo a dancing satyr holding a white drinking-horn. The profile as no. **84** but no fillet at the top of the stem, cf. *CVA* Louvre, x, pl. 750, 5. Beazley, *ABV* 713, Leafless Group, no. 207 *ter*.

86. Base and tondo only. PLATE 38. A dancing satyr carrying a white fillet. Leafless Group, ibid. no. 207 *bis*.

Skyphoi. Nos. **89**–**99** are of the last quarter of the sixth century. For their classification see Ure, *Sixth and Fifth Century Pottery from Rhitsona* 39 f., 57 ff. All have a reserved line inside at the top of the lip.

87. Fragment of body. PLATE 38. The legs of a komast and rays below. By the KY Painter (Beazley, *ABV* 680, KY Painter no. 19 *bis*). The skyphos Athens NM 1109 (Payne, *NC* pl. 51, 7) duplicates the drawing. 570–560. Trench C: from debris south of the Burnt House.

88. Fragment of body. PLATE 38. The wing and tail of a bird or siren; incised rosettes in the field. Cf. Oxford *CVA* ii, pl. 414, 7, 8; it is of the group mentioned ibid. 103, now called Group of the Oxford Lid (Beazley, *ABV* 711, our fragment as no. 5 *bis*). There is another of this group in Taranto from a tomb with a Corinthian amphoriskos of the 570's. About 570.

89. Fragments of lip and body. PLATE 38. Dancing maenads dressed in skins (cf. *CVA* Louvre, x, p. 743, 1) and men; the legs of a siren facing the scene from the right and a row of black tongues below. Red on the drapery and hair, white dots and dashes on skins. Heron Group. Around 520.

90. Fragment of body. PLATE 38. Male legs.

91. Fragment of body. The legs of a siren painted white on the ground of the vase: the lower part of the vase is painted but for a reserved line.

92. Fragments from the lower body of two skyphoi, Ure, op. cit. Type C. Late sixth century.

93. Fragment of body. PLATE 38. A seated figure and a sphinx back to back. Red stripe on the drapery. CHC Group.

94. Fragment of body. PLATE 38. Seated figure. CHC Group.

95. Fragment of body. PLATE 39. Beazley, *ABV* 711, CHC Group no. 119 *bis*. A sphinx before the handle palmette. White face and chest, red for the wing base, fillet and the palmette's central leaf. Carefully painted for this type. Around 520.

96. Fragment of lip and body. PLATE 39. Ibid. no. 119 *ter*. A sphinx before the palmette. White face and chest, red for the wing base and palmette's central leaf.

97. Fragment of body. PLATE 39. Apparently the fore-legs of a sphinx before a silhouette palmette. CHC Group.

98. Fragment of body. PLATE 39. Ibid. no. 119 *quater*. A sphinx to the right: red on her wing base.

99. Fragment of lip and body. PLATE 39. Part of two plain silhouette eyes, unusual on this shape. Cf. a skyphos in Palermo.

100. Fragments of lip and body. PLATE 38. Moving figures with branches in the field: rough incision and no colour. Ure, op. cit. Type K; cf. also *Hesperia* (1946) xv 294 ff.

101. Fragment of body. PLATE 39. An armed and striking Athena to the right: branches in the field. Ure, op. cit. Type K; cf. *Hesperia* xv (1946) pl. 46, 83.

102. Fragments of body. PLATE 39. Palmettes with open hearts and on one fragment the rear legs of a feline. Ure, op. cit. 71 f. Type R. Mid-fifth century.

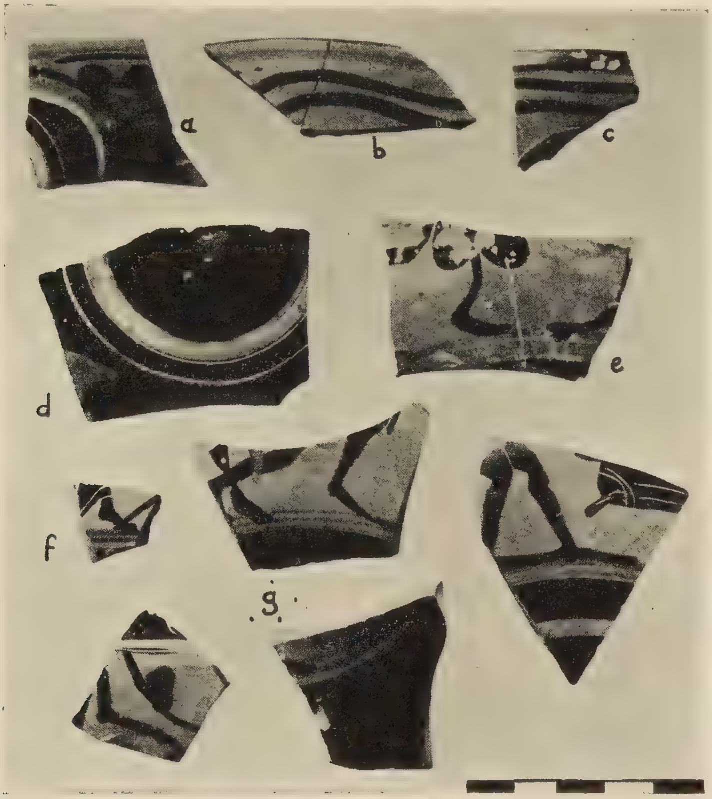


Fig. 8. Black-figure cup fragments, no. 79

Lekythoi

103. Fragments of shoulder and body. PLATE 39. Linked buds on the shoulder; on the body two men to the right, the first holds a staff, the overfall of his cloak is red, and the second has a red central panel to his cloak. Neater but similarly dressed contemporaries of the men by the Painter of Rhitsona 49.261 (*CVA* New York, ii, 2 f., pl. 3). Around 550.

104. Fragment of shoulder and body. PLATE 39. From the shoulder part of a cock, from the body the heads of an attacking satyr, a maenad and a watching youth; added red. Cock Class (Beazley, *ABV* 699, no. 67 *bis*), painted rather better than usual, closer to the Phanyllis Group (cf. E. Haspels, *ABL* pl. 19, 3). Around 500.

105. Fragment of body. PLATE 39. The centre part of a draped female figure to the right, beyond her perhaps the neck and collar of a dog; added red and white. Close to the Musée Rodin vase, *CVA* pl. 700, 6, 8 (see Beazley, *JHS* lxxii (1952) 156; he connects *BSA* xiv (1907–8) pl. 13*d*). Around 500.

106. Fragment of neck and shoulder. PLATE 39. Palmettes and dots on the shoulder, above it black tongues enclosed in lines and a black painted neck. The latter two features are innovations of the Athena Painter and in vogue by about 480 (E. Haspels, *ABL* 148). Trench C.

107. Fragment of body. PLATE 39. A warrior or Amazon falling on to one knee and raising his shield. Before him perhaps part of the foreleg of a horse. Little Lion shape, painted in the manner of the Diosphos Painter [Beazley]. Cf. the warriors of *Hesperia* xv (1946) pl. 52, 123–5. Soon after 500.

108. Fragments of shoulder and body. PLATE 39. The tips of close-set buds from the shoulder; palmette and lotus chain. In white the line circumscribing the palmettes, dots round the palmette heart and in the links. This and no. **109** are pre-Marathonian types of palmette lekythoi (E. Haspels, *ABL* 186).

109. Fragments of shoulder and body. PLATE 39. From the shoulder perhaps part of a cock. Body pattern as no. **108** with a red line at the base of the chain and two reserved bands lower on the body.

110. Fragment of shoulder and body. PLATE 39. Linked buds on the shoulder. A bearded head to the right: the paint blob at the right was overpainted white; a vine branch in the field. Group of Athens 581, cf. Madrid *CVA* i, pl. 47, 5. End of the sixth century.

111. Fragment of shoulder and body. PLATE 39. Close-set buds from the shoulder: below a black tongue frieze a woman to the right raises her hand; incised chariot reins across her body and the whip held by the figure lost to the left who was mounting the chariot. Probably a 'mounting Athena' scene, and the painted traces to the right may be from the head of an attendant Dionysos. Manner of the Haimon Painter, Beazley, *ABV* 706, no. 120 (7). Early fifth century. Trench C: from a fifth-century pit.

112. Fragment of shoulder and body. PLATE 39. A frieze of linked dots: below, a head with some white over-painting and branches in the field. Manner of the Haimon Painter. Trench C.

113. Inv. 3369. Neck and foot missing. PLATE 39. Preserved height 13·0. Palmettes below tongues on the shoulder and palmettes below a key pattern on the body. The quality of painting and rightward key suggest something near the Gela Painter (E. Haspels, *ABL* 78 ff.) who does not seem to have attempted such palmette lekythoi. The Diosphos Painter liked them, but his are rather neater and less crowded (ibid. 110 and pl. 36, 5), his keys run left, and shoulders carry buds. Miscalculation gave four palmettes on the shoulder and not five; note too that there are no dots between them and that the vase is not white-ground. Closest is Cambridge *CVA* i, pl. 260, 25. Soon after 500.

114. Fragment of a white-ground pattern lekythos with lower zone of lattice work (E. Haspels, *ABL* 181 f.).

115. Fragments of at least two white-ground lekythoi: their decoration is not clear.

Alabastron

116. Fragment from the painted base.

Goblet

117. Fragment of stem and the lower bowl of the type *EADélos* xxi, 54, pl. 49, 185. From its context here, around 500.

II. RED FIGURE

Volute Craters

118. Inv. 3361. Fragments of neck and body. PLATES 40, 41. Diameter at rim 46·0. Cook, *JHS* lxx (1950) 10, *ILN* Nov. 19 1949, 775; Beazley, Paralipomena to *ARV* 418, add as no. 6 *bis*, *Boston Vases* ii. 81 f. The paint has a metallic greenish tinge and the clay in the break is brick-red (except fragment (*h*) described below). Painted within but for the inaccessible zone under the shoulder. A heavy ruddle coating and red in the groove above and on the lower part of the moulding in the middle of the neck. An ivy chain on the volute sides and ovolo at the handle bases except where the body scene intervenes (*a*). On the neck maeanders, a double lotus and palmette chain and ovolo on the central moulding. On *A* a girl in a chiton running left with outstretched hand, a winged youth in a short chiton moving to the right with his arms stretched out towards a girl who runs away; she wears a sakkos and ear-rings, but the rest of the body is missing on our fragment. Another girl runs to the right also looking back and gesticulating, and a fourth moves more slowly and towards the incident with a more mildly deprecating gesture. Both wear chitons and himatia, the former a wide fillet and the latter a sakkos. Finally, another similarly dressed figure is approaching from the right. On *B* the shoulder and hand of a youth moving right carrying two spears and a chlamys draped over his arm. Before him a girl runs away looking back and raising her arms in alarm; she wears a diadem, necklace, and bracelets, her hair is knotted at the nape of her neck, and her dress is chiton and himation. A second girl runs more hurriedly holding her chiton hem in one hand and a flower in the other; she wears a diadem, chiton, and himation. A third girl wears peplos and himation, triangular pendant-ear-rings and sakkos. Watching from the wings is a bearded man holding a staff topped with a flower and striped. From the body comes (*a*) a handle fragment preserving the upper part of a horse's head from the body scene which must have passed under the handles. (*b*) Below a tongue frieze a male head in a wide fillet[56] with hair hanging to cover the ears, the upper part of a Doric column with a central line on the shaft and three displaced guttae over the abacus, and before it an upright sheathed sword. (*c*) The centre part of an armed figure holding a spear across his body and wearing a cuirass over a short chiton. (*d*) The knee of a youth and a column shaft. (*e*) A foreshortened foot over the maeander strip which served as a base line for the body scene. (*f*) Three horse's hoofs and the heel of a bare foot to the right. (*g*) A handle base with ovolo frieze, to the left the tip of wing feathers, to the right a staff. (*h*) The upper part of an armed figure with head slightly inclined and arm held forward. The fabric of this fragment is strikingly unlike that of its fellows, being a pale buff throughout, but the curvature, hand, and subject make it surely from the same vase, though perhaps from the other side, which may also be the main side.

---

[56] F. Noack, *JdI* xxx (1915) 136 f.

This is from the hand of the Niobid Painter in his early period,[57] though it is not one of his earliest works. It may be dated about 460. The neck of a volute crater does not by its scale afford a field for the painter's best work and the Niobid Painter's figures in this position are far from his best. The quality of the painting on the neck of our vase and the tantalizingly few fragments preserved from the body suggest that the complete vase may have been one of his finest pieces. His work was for the most part sold in the West but his vases have been found in South Russia, Rhodes, Palestine, and now Ionia.

The spotted chiton and its hem, the groups of vertical lines on drapery, and the angular representation of folds on the himatia of the three girls on the right on *A* find ready parallels on the painter's early and middle work.[58] Eye (*b*) and foot (*e*)[59] are most carefully drawn and the shading on the upper lid of the eye is most naturalistic. The hair on the same fragment is unusually tidy without the customary loose ends spreading over the cheeks.[60] The gesture with her 'stole' of the girl on the right on *B* is commoner[61] than the over-arm cross fashion of her companion, who in her haste clutches her chiton hem[62] and with her fore foot well off the ground must be thought of as moving more quickly than her companions who find time to look round. She is perhaps the object of the pursuit or more frightened than the others, but her flight is not distraught for she retains her flower, unlike Oreithyia often in similar circumstances.[63] The pursuer who carries two spears is the anonymous youth often thus occupied in vase scenes of this period, some by the same painter.[64] For his name Theseus may serve, for he is commonly thus dressed and equipped.[65] The figure on the right may be an onlooker or parent; in similar scenes he is often appealed to by the fleeing girls.[66] The interpretation of the pursuit scene on *A* is difficult and the two figures on the right may suggest that it is more a matter of an apparition than an attack. The winged figure should not be Boreas or a Boread as they are usually bearded (the father at least), booted, and often shaggy.[67] It may be Eros, who sometimes appears thus[68] though he does not usually pursue women except on the behalf of another god, Poseidon, Dionysos, or Zeus, and it is usually evident for whom he is working;[69] he is also regularly naked, although there are exceptions. He grew up at the end of the sixth century and the earliest representation of him as a winged youth rather than a baby also shows him fully clothed.[70] The running figure behind the winged youth on our vase shows that the frieze in which they appear was a balanced composition around the flying figure. Of the body scene too little is preserved to admit of certainty, but we have most of the ingredients of the painter's favourite Warrior's Departure scene.[71] The youth on (*b*) and (*d*) need not be the central figure, but he is presenting a sword to a warrior whose body is turned towards us on (*c*) and (*e*); if so, the latter stands with his weight on his right leg. Other combinations of the fragments are possible. The column is of the porch of the house and the horses on (*a*) and (*f*) could be associated in the same scene. The decoration of the leather cuirass of the figure on (*h*) (the chequer panel may be protective strengthening) and its cut at the neck find parallels on the Niobid Painter's vases.[72] The figure, for all the apparent femininity of the hair style (compare especially the hair of the girls on *A*), must be male. An unhelmeted Amazon apparently in repose would be out of character and an arming woman or goddess too unfamiliar.[73]

---

[57] Beazley, *ARV* 418 ff.; T. B. L. Webster, *Der Niobidenmaler* (10 nn. 7 and 17 on dating); A. Rumpf, *MuZ* 93 f.

[58] Webster, op. cit. 11 f. Cf. the figures on his pls. 6, 8, 12, 19*b*, 24*a*. For the himation of the girl next to the pursuing youth on *B* cf. *MonIned* i, pl. 37; ix, pl. 17, 2, and her hair style Webster, op. cit. pl. 9*a*, 11*a*, and British Museum *CVA* iii, pl. 172, 2. For the wings cf. J. Roulez, *Vases peints de Leide* pl. 6; Webster, op. cit. pl. 11*b*.

[59] Webster, op. cit. pls. 3, 4.

[60] *BMFA* xl. (1942) 12.

[61] Webster, op. cit. pls. 12*d*, 23.

[62] Cf. Webster, op. cit. pl. 23; Würzburg, Langlotz, pl. 180; *MonIned* i, pl. 37.

[63] *MonIned* ix, pl. 17, 2 (Niobid Painter), but cf. the pursuit on *CVA* Umbri, i, pl. 788, 7.

[64] Cf. Webster, op. cit. pl. 13*a* (note the dropped flower), *BMFA* xl (1942) 12 (where the column, altar, and palm may suggest Apollo, but cf. Webster, op. cit. pl. 20) and Louvre G 427, *CVA* ix, pl. 637, 3 (Geneva Painter); New York, Richter and Hall, pls. 104–5 (Chicago Painter).

[65] On the identification see Beazley, *Boston Vases* ii. 81; F. Brommer, *Vasenlisten zur griechischen Heldensage* 130; D. M. Robinson, *AJA* xl (1936) 511 ff. (*CVA* Robinson Collection, ii, pls. 293–4*c*; Beazley, op. cit.) identifies an Apollo by his wreath, but a wreath is commonly worn by heroes so dressed and Apollo pursuing Daphne carries a laurel branch to distinguish him (*AJA* xl (1936) 511 nn. 4 and 5; H. Metzger, *Les Représentations* 156). The scene cannot be called 'everyday life' but, becoming a commonplace on vases, it may have lost any specific mythological explanation.

[66] e.g. *CVA* Florence, ii, pl. 641, 4, Villa Giulia, i, pl. 28.

[67] Thus always on the Niobid Painter's vases, Webster, op. cit. pl. 11*a*, *MonIned* ix, pl. 17, 2.

[68] e.g. *CVA* Madrid, ii, pl. 95, 1*a*; Louvre, v, pl. 375, 9; British Museum vi, pl. 364, 9; Bonn, i, pl. 15, 1, 3; Lenormant et de Witte, iv, pl. 58; Bologna, G. Pellegrini, *Vasi Greci* pl. 1; E. M. W. Tillyard, *The Hope Vases*, pl. 29, 207; Leningrad St. 1627, *Compte Rendu* 1872, 143; *Hesperia* xx (1951) pl. 79, 5*a*; and see Beazley, *Raccolta Guglielmi* 89. A name for the girl pursued is not easy to suggest.

[69] *RE* s.v. 'Eros' 498; Roscher, *Lexikon* s.v. 'Eros' 1357; H. Metzger, *Les Représentations* 49 ff.; Beazley, *CVA* Oxford, i. 10. On the New York gem with Eros carrying a girl see Beazley, *Lewes House Gems* 28, Richter, *Catalogue of Engraved Gems in New York* 11 f.

[70] The red-figured plaque Akr. 1042 (Graef-Langlotz pl. 82) with its added fragment North Slope S–5–1 (*Hesperia* iv (1935) 238, no. 27, fig. 12). Other exceptions (unless they are

The profile of the neck is as the earlier red-figure volute crater type[74] and a close parallel to the floral chain and moulding below it is afforded by the Niobid Painter's crater in Palermo.[75] The maeander pattern recurs along the lip unbroken by the usual insertion of a saltire.[76] From Trench H: under the fourth-century occupation level.

119. Fragment of shoulder and handle base. PLATE 41. Ovolo around the latter and part of a laurel branch below.

Calyx Craters

120. Fragment of body. PLATE 41. Part of a griffin. The inner detail of its white body is in brown paint and brown lines run across the wing feathers, at whose bases was a row of large dots, part of two of which are seen to the right. Careful work of the earlier Kertsch style 370–360, cf. the Louvre vases *CVA* v. pls. 383, 384. The main run of griffin and Arimasp vases comes later in the fourth century. Trench H: latest occupation level.

121. Fragments from the lips of calyx craters. FIG. 9. Ovolo frieze, and ivy leaves flanking a red line beneath a plain rolled lip, the latter probably from a black-figured vase.

Bell Craters

122. Fragment of body. PLATE 42. The foot of a youth wearing hunting anklets passes before the foot of a running woman. Maeander and saltire strip below. It is the familiar pursuit scene as, for instance, on *CVA* Robinson Collection, ii, pl. 288 (*ARV* 693, Christie Painter) which could be by the same hand. Third quarter of the fifth century.

123. Fragments of body. PLATE 39. Red in the grooves above. On (*a*) the head of a woman running to the right with one hand raised before her; (*b*) the lower folds of the drapery of a standing figure and the end of a staff. The wide eye, massed hair and loop fold are still classical, cf. *EADélos* xxi, pl. 37. Last quarter of the fifth century, though not late in it.

124. Fragment of body. PLATE 42. A naked male seated on his cloak and holding a staff or thyrsos in his left hand; before him part of a standing woman and to the left the foot of another. Maeander and saltire strip below; relief line contour to the body. This is probably Dionysos attended by maenads. In such a style might the Jena Painter have painted bell craters (cf. W. Hahland, *Vasen um Meidias* pls. 16*b*, 23*a*). Cf. too the Meleager Painter's cup *JdI* xxv (1910) 129 f. (*ARV* 873) and a vase in Cracow, K. Schefold, *UKV* fig. 78. First quarter of the fourth century.

125. Fragment of body. PLATE 42. A running man to the right and drapery at the left. The sketch on the further leg suggests that the runner may have held a torch or staff. Around 400.

126. Fragment of body. PLATE 42. The lower part of a standing draped figure on a maeander strip. The box-like fold endings are not late. Third quarter of the fifth century.

127. Various fragments of bell craters (FIG. 9) including handles with ovolo frieze at the base, lip fragments bearing

---

well-groomed Boreads) are on the pelike *AZ* 1845, pl. 31, 2 (*JHS* lxxi (1951) 190, no. 106) and London E 360 (*ARV* 391). On some vases Eros carries a mantle over his arm, e.g. A. Greifenhagen, *Griechische Eroten* 15, fig. 8, 17, fig. 10, 19, fig. 12; Oxford 1931. 39 (*ARV* 883, no. 1); Piraeus Museum (*ARV* 747, no. 84); and cf. C. T. Seltman, *BSA* xxvi (1923–5) 94, fig. 4, pl. 13, and Richter, op. cit. pl. 16, 92.

[71] Cf. Webster. op. cit. pl. 3*a*; *CVA* Louvre, iii, pl. 166, 3; *BMFA* xl (1942) 13. On departure scenes Beazley, *Boston Vases* ii. 77 ff.

[72] *MonIned* xi, pl. 14 (right); Webster, op. cit. pl. 10*a*.

[73] But cf. the hair of the Amazons on the Naples volute crater, FR pl. 28. The arming of Achilles on Skyros is another possibility, but the figures and the moment depicted are not canonical for the scene so far as it is known from later paintings, and the representation too fragmentary here.

[74] The later type as Webster, op. cit. pl. 1 (Altamura Painter) and the Niobid Painter's later vases, Louvre G 343, *CVA* iii, pl. 166, 3. Cf. Beazley, *Boston Vases* ii. 80. The painted moulding below the floral chain which appears on our fragments seems to mark the transition to the later, more complex profile.

[75] A. Della Seta, *Italia antiqua*^{1} 101 B. The chain on the Altamura Painter's vase in Ferrara, S. Aurigemma, *Il R. Museo di Spina* (ed. 1) 151, 153, is very similar.

[76] Cf. Webster, op. cit. pls. 6, 13, 23.

the conventional laurel-wreath pattern, one preserving in white part of the body decoration, part of the palmette below a handle (? from a stamnos), foot fragments, and a fragment with two mend-holes, one through a handle stump, suggesting that the vase had been mended in antiquity without its handle.

at the left and part of the thigh of a figure in a short chiton, the usual foundation dress for an armed man (cf. no. **118** (*c*), PLATE 41). Fine folds with the leg outline showing. Period and style of the Niobid Painter's vase no. **118**; only its find-place leads me to treat it separately. From City Wall test pits on the north part of the site.

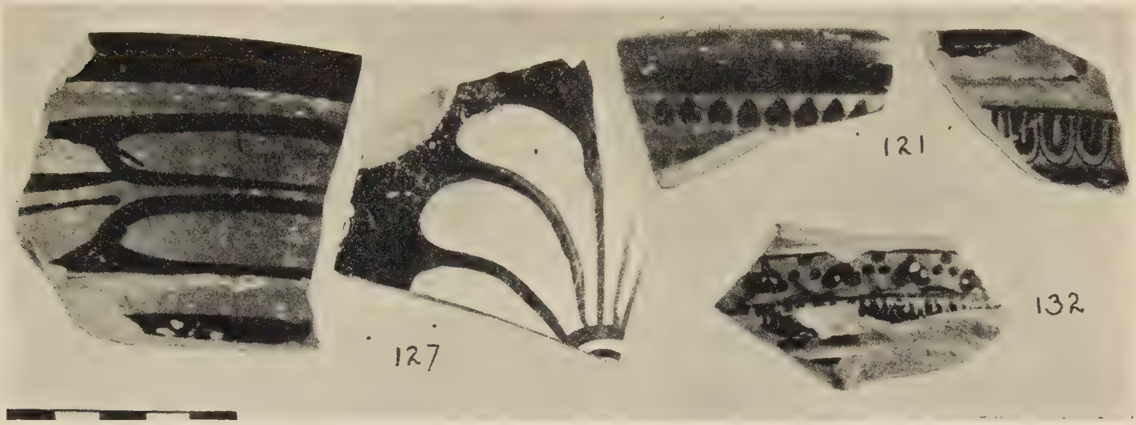


FIG. 9. RED-FIGURE CRATER FRAGMENTS

Column Craters

128. Fragments of lip and body. PLATE 39. A draped figure holding a staff, and the right-hand border of the panel. Part of the rim with a linked bud frieze on its top and a double dot row on its face (not illustrated). Cf. Würzburg 528, 529 (Langlotz, pl. 211).

129. Various fragments of column craters including a fragment with base rays and mend-holes, lip fragments with buds above and ivy leaves on the face, a fragment bearing buds from the neck and tongues from the shoulder, a double step foot with a red line on the lower moulding, and fragments of a handle and lip plain-painted but for red lines at the lip edges (as Richter and Milne, *Shapes and Names* fig. 47).

Other Crater Fragments

130. Fragment of body. PLATE 42. An indefinable object

131. Fragment of body. PLATE 42. Part of a standing draped figure.

132. Fragment from the lip, probably of a bell crater. FIG. 9. Ivy leaf and berries chain with added white dots; ovolo below on a rectangular moulding above a red painted groove.

Neck Amphora

133. Fragment of neck. PLATE 42. Palmette decoration. Late fifth century.

Pelike

134. Fragment of body. PLATE 41. A thin reserved line within. A standing figure with head inclined down to the left holds above his head a rock. In the field a boukranion with hanging ornament. White for the boukranion and drapery, the hair fillet, and the berry clusters around it; brown lines on the rock and as shading on the drapery.

The figure is male (cf. the dress of the Panathenaic cavaliers on Louvre G 528, H. Metzger, *Les Représentations* 358 f., pl. 47, 3). It recalls the scene on a fragmentary bell crater from Olynthus (*Olynthus* v, pl. 130, 289) on which a similar figure wields a rock in the same direction as ours (and with the same furrowed expression but a three-quarter face), but there he is supported from the other side by at least two youths using stones and spears, again against an objective at ground level. For an explanation of these fragments we have to turn to the Paestan vase London F 154 (D. Trendall, *Paestan Pottery* 76 f., pl. 28*a*, *BSR* xx (1952) 15, no. 330, the Boston Orestes Painter) on which the central figure, looking left and wielding a rock, takes part in a boar hunt. The supporting figures do not correspond with those on the Olynthus fragments and, as Trendall points out, the boar may not be the centre of interest in the scene from which the painter takes an excerpt. We have as it were the right-hand panel of a triptych. This then should be the context of the Smyrna and Olynthus fragments. The full explanation of the scene remains elusive, but the Calydonian hunt remains a possibility (cf. the scene on *FR* iii. 112, noting the antlers on fig. 55, and Metzger, op. cit. 312 ff.). Stones are still common weapons on the Roman sarcophagi which carry these scenes. Cf. too the stone-throwing women killing Orpheus on the Hague vase (*FR* iii. 355, pl. 178) and the Arimasp (Metzger, op. cit. pl. 42, 1), though the sex of the former and distinctive dress of the latter permit no closer association with our fragment. Cf. too the Chimaera-hunter, *MarburgerWPr* 1952–4, pl. 3, and, on rock-throwing in general, see D. B. Thompson, *Hesperia* viii (1939) 296 f. For the decorated boukranion compare S. Aurigemma, *Il R. Museo di Spina* (ed. 1) 222. Good early Kertsch style, early in the second quarter of the fourth century. Trench H: latest occupation.

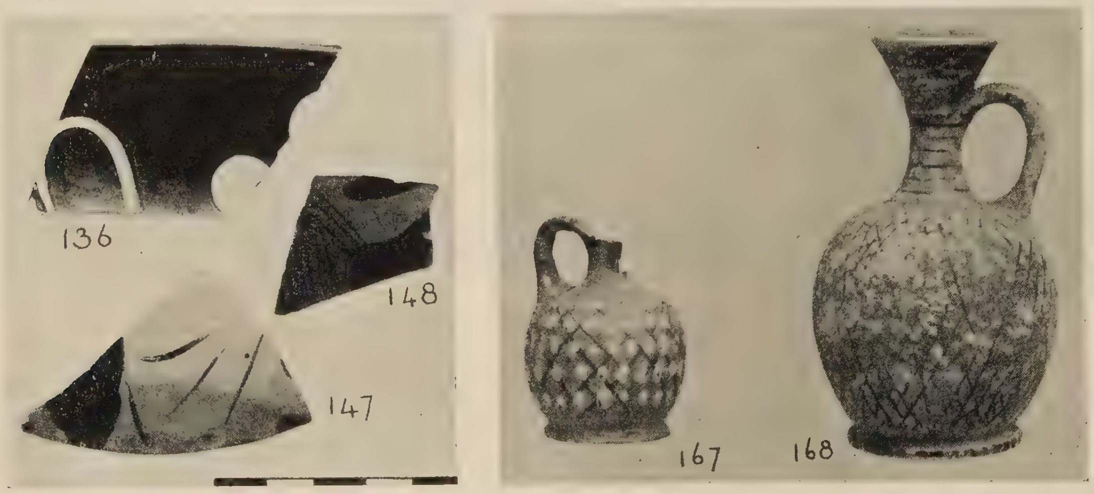


FIG. 10. RED-FIGURE AND PATTERNED VASES AND FRAGMENTS

Lekane

135. Fragment of lid rim. PLATE 42. Ovolo and dots on the flange. The ends of a patterned sash and to the left the draped knee of a moving figure. For the scene and similar pattern see S. Aurigemma, op. cit. 123, and on the sash or scarf P. E. Corbett, *Hesperia* xviii (1949) 312 f. Second quarter of the fourth century.

Cups

136. Fragment of unmodulated lip. FIG. 10. Part of the tendril and palmette by the handle; relief line contours. Late sixth century.

137. Fragment of a body. PLATE 42. From the inside the neck and head of a small animal which must be a rabbit despite its short ears; to the right the tips of outstretched fingers, perhaps of a child; relief contour. If a child, the situation is reminiscent of scenes on choes but I cannot explain the plain border above (the cup centre is top right of the sherd as figured) nor suggest the whole scene of which we have part.

138. Fragment of body. PLATE 42. A naked youth to the left with his left hand on his hip and his right holding a staff and cloak. First quarter of the fourth century.

139. Base of a stemless cup. PLATE 42. Head of a woman wearing a sakkos in the inner tondo. Her hair fringes the material instead of hanging in the triangular earlock of later fashion (e.g. *Olynthus* v, pl. 111, 215; xiii, pl. 84, 58). Cf. the calmer heads of around 400 on squat lekythoi (ibid. v, pl. 116, 251; *JHS* lviii (1938) 23, lix (1939) 26 f.), and for a head in this position Jena 500 (*ARV* 883). Late in the the first quarter of the fourth century.

140. Fragment of body: cup kotyle. PLATE 42. The legs and belly of a rearing horse to the right. The object at the left may be the foot of another horse; a team then. At the right a palmette is being ridden down, or it may be rocks. Around 400.

141. Fragment of lip and body: cup kotyle. PLATE 42. A draped woman to the left; before her part of a white painted object (? a lyre) and she wears a white dot tiara. I know this fragment only from its photograph. Early fourth century.

142. Fragment of body and handle: cup kotyle. PLATE 42. By the handle stump the upper arm of a draped figure. Late fifth century.

143. Fragment of body. PLATE 42. The shoulders of a stooping figure in a foldless chiton decorated with drop pattern and a fringe. Fourth century.

144. Fragment of body. PLATE 42. The wings and rump of a squatting sphinx. Semicircles pattern the wings and spots the body.

145. Fragment of body. PLATE 42. A draped figure by the handle palmette. Style of nos. **153–5.** With cups nos. **146**, **147** in the second quarter of the fourth century. Trench C: level of latest occupation.

146. Fragment of body. PLATE 42. Draped figures. The triangular object with cross and dots may once have been a discus. Similar filling exigences by the Painter of Vienna 116 (*ARV* 887, *CVA* (Austria) Vienna, i, pl. 34).

147. Fragment of body. FIG. 10. The lower part of draped figures.

148. Fragment of body. FIG. 10. A draped figure with raised arm.

149. Fragment of body. PLATE 42. A boldly everted lip which thickens only slightly; possibly from a kantharoid vase as Beazley, *Greek Vases in Poland* 70. A horse's neck and ears, perhaps from a jockey scene as *JHS* lxiv (1944) pl. 2, 24. Inside the lip an ivy wreath, leaves reserved, tendrils red and berries white; on the pattern L. Talcott, *Hesperia* iv (1935) 500 f. Late fifth century.

Skyphoi

150. Two fragments from the bodies of 'glaux' skyphoi. PLATE 42. The neck and shoulder, and the wing of owls with part of the accompanying olive sprigs. References and illustrations in F. Eichler *CVA* (Austria) Vienna, i. 35 f. and pl. 44, and see Beazley *JHS* lxix (1949) 123. On their dating F. P. Johnson in *Studies Presented to D. M. Robinson* ii. 96 ff., *AJA* lix (1955) 119 ff. Middle of the fifth century.

151. Fragment of body. PLATE 42. Part of a chair, with pillar-supported arms and a chequered cushion; it may be drapery that hangs top left. Careful work of the middle of the fifth century.

152. Fragment of body. PLATE 43. Part of the handle palmette and drapery of a figure moving right. Another fragment of a similar vase bears the handle palmette and a small circle filling the gap between handle and flower. Third quarter of the fifth century.

153. Fragments of lip and body. PLATE 43. The rim curves out boldly (cf. *Hesperia* xviii (1949) 317, 319, fig. 1, 138). Draped youths from either side of the vase, a discus between them (cf. *CVA* British Museum, iv, pl. 224, 5), and spirals from beside the handles. On the head type see C. Dugas, *EADélos* xxi. 66 f. and references there. Shape and hand recur in vases from the Agora and Pnyx. He is a poor companion of the Painter of Vienna 202 (*ARV* 887, *CVA* (Austria) Vienna, i. 27, pls. 30 and 31, 1–3, at least the outside figures). First quarter of the fourth century. Trench C: under latest floor level.

154. Fragments of body. PLATE 43. Profile rather straighter than no. **153.** Draped youths and part of the handle spirals (not illustrated). Dots at the inner corners of mouth and eye. Style as of no. **153** if not rather better.

155. Fragment of body. PLATE 43. Part of two draped figures, one with a staff. Trench C: level of latest occupation.

Askoi

156. Fragments of body. PLATE 43. Part of four female heads from two pairs facing each other over spirals. Below is an ovolo frieze bordered by a light groove above and below. The ends of the head-dress hang forward and seem as much like a head scarf like those often carried (cf. on no. **135** and the decorated ends on *Olynthus* v, pls. 120 f., 267, 268) as a Phrygian cap or Amazon head-dress. The grooves and ovolo are unusual on the shape, but cf. C. Blinkenberg, *Lindos* i, pl. 129, 2705 and *BSA* xlix (1954) pl. 9, 119, from Chios, which are very close; Agora P. 14632 is similar, and cf. plain askoi as our no. **207.** For the decoration cf. *Swedish Cyprus Expedition* ii, pl. 145, M. 14. 5, and an askos from Cumae, *MA* xxii (1913) pl. 104, 5 (left); single heads are commoner. Second quarter of the fourth century. Trench C: level of latest occupation.

157. Fragment of body. PLATE 43. The springing of the spout is to the right. The same type as no. **158.** Ears and the shaggy neck of an animal, perhaps a dog (as those in G. van Hoorn, *Choes and Anthesteria* figs. 322, 522). Second quarter of the fourth century. Trench C: latest level.

158. Fragment of body. PLATE 43. Original diameter of central moulding 5·0. The type with imitation lid top, here bearing an ovolo frieze (Beazley, *AJA* xxv (1921) 326 n. 3 type 2).

159. Fragment of body. PLATE 43. Shape as no. **158.** Laurel wreath, cf. *Olynthus* v, pl. 140, 403, 404; *CVA* Sèvres, pl. 550, 19; *Swedish Cyprus Expedition* ii, pl. 145, M. 67. 13. Another similarly decorated fragment was painted within: paint was often poured into vases of this shape and swilled around the inside before firing. Mid-fourth century. Trench C: latest level.

160. Fragment of body and spout. PLATE 43. Base of a spout with part of a tendril. Trench C: latest level.

161. Fragment of body and spout. PLATE 43. Base of the spout with part of a dotted head-dress (?) and of a palmette or wing.

Squat Lekythoi

162. Fragment of body. PLATE 43. The dotted rump and part of the wing of a swan. Careless work of around 400.

163. Fragment of body. PLATE 43. Part of a wing with smudged dots at the feather bases. Perhaps a sphinx as Würzburg 577 (Langlotz pl. 209) and cf. *CVA* Copenhagen, iv, pl. 170, 1–3. Around 400.

III. BLACK AND PATTERNED WARE

The most important discussions on black vases of the fifth and fourth centuries are L. Talcott in *Hesperia* iv (1935) 476–523 and P. E. Corbett in *Hesperia* xviii (1949) 298–345. C. Dugas's publication in *EADélos* xxi of the red-figured and black vases from the Rheneia Purification Pit (a *terminus ante quem* of 425 B.C.) is the most valuable chronological contribution since the articles cited; for some mid-fifth century shapes see also C. Boulter in *Hesperia* xxii (1953) 59–115. Corbett in *Hesperia* xxiv (1955) 172 ff. discusses the technique of stamping. Some fragments published below may be from decorated vases. They are included if the shape is known in plain black vases and because they cannot be associated with published decorated pieces. The patterned vases are listed first.

Patterned Vases

164. Saint Valentin kantharos fragment. PLATE 43. Tongues at the rim and diamond pattern below with added white. On this class of vases see Howard and Johnson in *AJA* lviii (1954) 191 ff. Our fragment should be of their Group III or IV (ibid. 192 f.). Third quarter of the fifth century.

165. Saint Valentin kantharos fragment. PLATE 43. Scale and feather pattern. See no. **164.** The deep feather pattern (at least four rows) makes it difficult to fit this piece into Howard and Johnson's rather rigidly detailed classification, but cf. their pl. 34, fig. 17. Last quarter of the fifth century.

166. Fragment of skyphos of Corinthian type. FIG. 11. The lower part only is preserved. Crossed rays in the reserved band above the foot, two glazed circles and a dot below the foot. On the type Corbett, *Hesperia* xviii (1949) 319 f.; the profile is as his no. 27, fig. 2. The grouping of the rays shows that a triple brush was employed. Last quarter of the fifth century.

167. Squat lekythos. FIG. 10. Height 6·6. The lip is missing. Black net pattern with added white dots and a black band on the neck. This and no. **168** represent about the extremes in size for this type (smaller are found), on which see Beazley, *BSA* xli (1940–5) 17 ff., D. M. Robinson, *Olynthus* xiii. 160 ff. Small fragments of at least four others were also found. Early fourth century. Trench C: under earlier fourth-century occupation level.

168. Squat lekythos. FIG. 10. Height 12·3. Decorated as no. **167** but there are white vertical lines over the horizontal lines on the neck. Second quarter of the fourth century. From Cist Grave β. Similar fragments from Trench C: below level of latest occupation.

169. Squat lekythos. PLATE 43. Height 6·6. The lip is missing. Plain black with a running-dog frieze in the reserved band on the upper body. Cf. *Hesperia* xviii (1949) pl. 91, 42, and *Olynthus* xiii, pl. 167, 399, 400. Late fifth century.

170. Lekane fragment. PLATE 43. Hanging hooks in the reserved band of the handle zone. Cf. *Olynthus* v, pl. 60, 91, xiii, pl. 134, 1 (reversed light and dark), ibid. pl. 135, 209 and *CVA* Musée Rodin, pl. 727, 7 (?Italiot); not an uncommon pattern on fish-plate rims. Trench C: level of earlier fourth-century occupation.

Cups

171. Fragments of cups with straight offset lips. Bloesch's Wiener Schalen type (*Formen attischer Schalen* 139 ff., *Hesperia* v (1936) 337, fig. 4). Second quarter of the fifth century.

172. Fragments of cups with offset lips, shallow concave on the outside, deeper and flat with an angular ridge in. A decorated example is Fogg Museum *CVA* pl. 356, 1. Cf. Oxford *CVA* i, pl. 140, 2, *Hesperia* xxii (1953) 73, fig. 2, 199 (stemless). Second quarter of the fifth century.

173. Fragments of cups with unmodulated lips. Others are modulated within only. These are common fifth-century types, some of which should be from plain cups as there is a singular dearth of decorated cups from Old Smyrna until the end of the century. On some the band within the handles is left unpainted.

174. Fragments of stemmed cups with offset lips. Cf. *Hesperia* xv (1946) 316 f., pl. 63, 230–5, Bloesch, op. cit. pls. 33, 4; 34, 3 (Fortschrittliche Richtung). Ours are of the late sixth century and earlier fifth for the most part; some perhaps from the later palmette and band cups published above.

Stemless cups. Nos. **175–7** have a cushion moulding beneath with a concave moulding at the back of the foot (cf. *Hesperia* iv (1935) 502, fig. 20, 95, but a less accentuated central cone). Nos. **178–84** are similar but lack the concave moulding, the cushions meeting the back of the foot in a corner as on light cup kotylai (ibid. fig. 20,11). Nos. **185–92** lack the cushion moulding and most have a simpler foot. On the impressed decoration see A. D. Ure, *JHS* lvi (1936) 205–15, P. E. Corbett, *Hesperia* xviii (1949) 322 f.

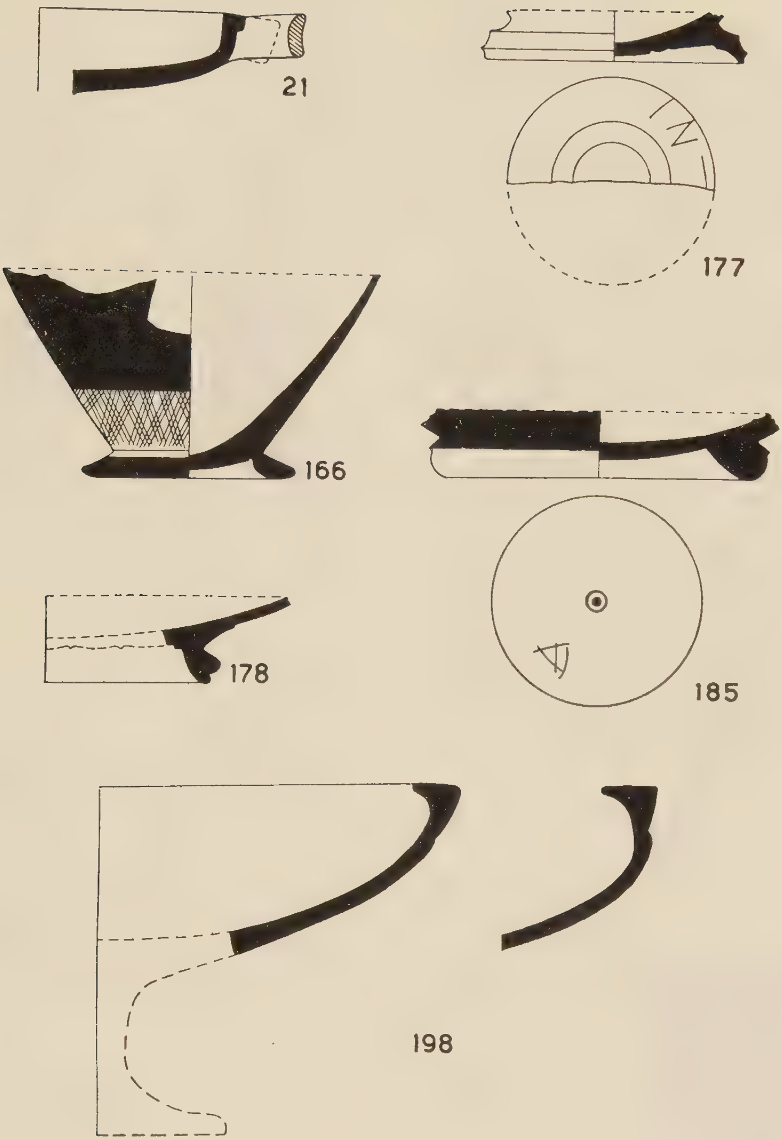

21
177
166
178
185
198

Fig. 11. Sections of black and patterned vases (1:2)

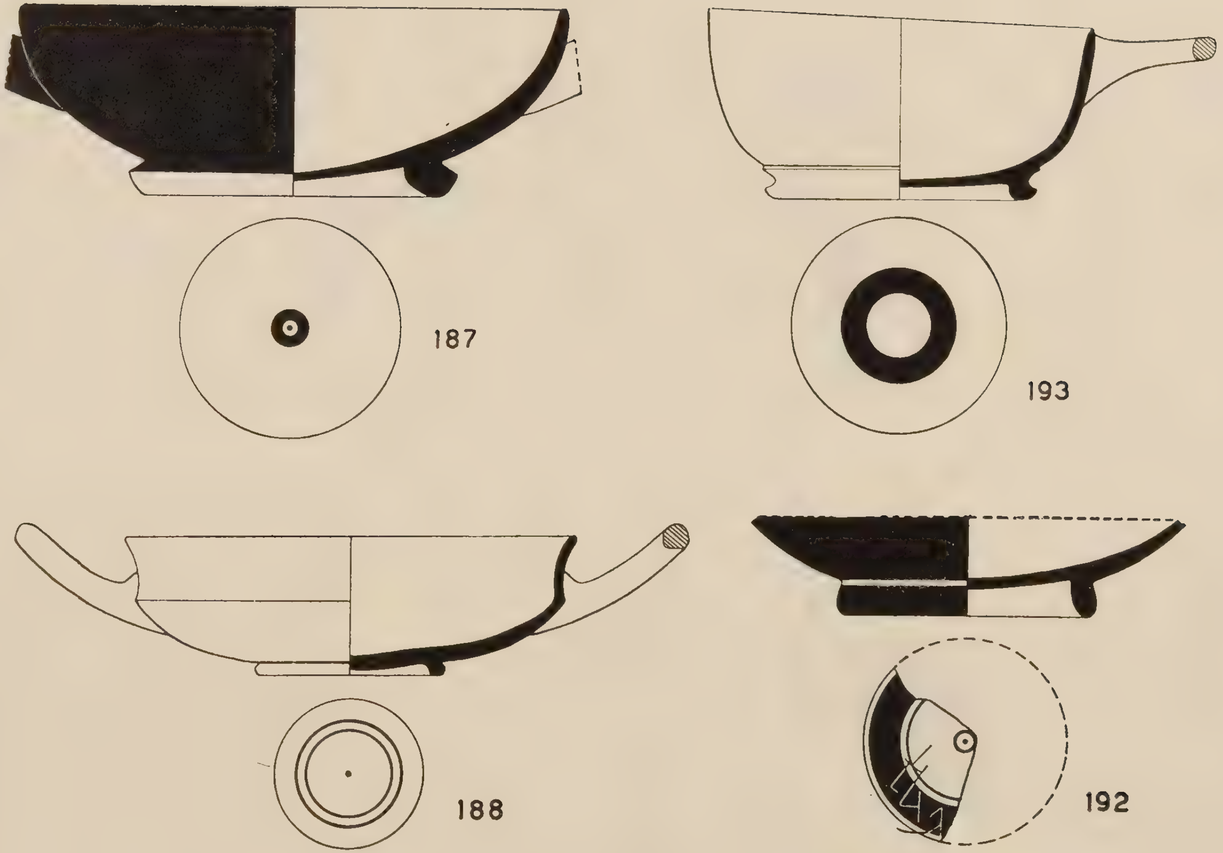

187
193
188
192

Fig. 12. Sections of black cups and a bolsal (1:2)

175. Fragment of foot. PLATE 43. Diameter 10·0. Profile as *Hesperia* iv (1935) 502, fig. 20, 95. Painted beneath and with impressed decoration within. Third quarter of the fifth century.

176. Fragment of foot. PLATE 43. Diameter 11·0. Profile as no. **175.** Painted beneath and with impressed decoration within. Around 430.

177. Fragment of foot. FIG. 11. Diameter 7·0. A cushion-moulded painted underside bearing a graffito.

178. Fragment of foot. PLATE 43, FIG. 11. Diameter 9·0. Completely painted beneath and with impressed decoration within, the centre-piece missing. A very early type with the arcs separated by short dashes only, not lines continuing towards the centre to form a rosette. Perhaps before 450.

179. Fragment of foot, PLATE 44. Diameter 9·5. Impressed decoration within. Third quarter of the fifth century.

180. Fragment of foot. PLATE 44. Diameter 9·0. Impressed decoration within, cf. *EADélos* xxi, pl. 50, 149, Akr. 1274 (Graef-Langlotz pl. 91). Around 430.

181. Fragment of foot. PLATE 44. As in no. **180** the centre circle in the cushion foot is reserved but for a dot and two circles, cf. *JHS* lvi (1936) 209. Impressed decoration within. Around 430.

182. Fragment of foot. PLATE 44. Diameter 11·0. Impressed decoration within, cf. *JHS* lvi (1936) 213, fig. 15. 430–420.

183. Fragment of foot. PLATE 44. Diameter 10·0. Impressed decoration within, cf. ibid. fig. 17. Early last quarter of the fifth century.

184. Fragment of foot. PLATE 44. Diameter 9·5. Impressed decoration within, including an unusually full centre-piece. The chain of palmettes laid on their sides is uncommon, cf. *Hesperia* iv (1935) 485, fig. 8, 99, xviii (1949) pl. 88, 67. *EADélos* xxi, pl. 50, 157, Samos *AM* liv (1929) 44, fig. 32, 1, Agora P 21198, Oxford G. 139.2 (from Naucratis). Last quarter of the fifth century.

185. Fragment of foot bearing a graffito. FIG. 11. Diameter 8·6.

186. Fragments from the feet of stemless cups similar to no. **185.** Characteristic is the groove on the upper edge of the foot, occasionally showing a heavy miltos coating. Current in the second and third quarters of the fifth century.

187. FIG. 12. Rim diameter 14·6. The underside reserved but for a dot and a circle and the outer edge of the foot reserved. The handles are missing and the band within the handles is not painted.

188. PLATE 43, FIG. 12. Height 3·65. The underside and resting surface reserved but for two circles and a central dot. Cf. *EADélos* xxi. 52 f., pl. 48, 150–65. Third quarter of the fifth century. Fragments of other cups of this type and date were recovered.

189. Fragment of foot. PLATE 44. Diameter 5·0. Ring foot and underside all painted so far as preserved. Impressed decoration within, the centre-piece missing. On the type see Corbett, op. cit. 329; cf. the decoration of the later bowl ibid. pl. 92, 60. Around 420.

190. Fragment of foot. PLATE 44. Diameter 6·0. The underside reserved but for a painted band and two circles. Impressed decoration within, cf. *Hesperia* xviii (1949) pl. 88, 145. Last quarter of the fifth century.

191. Fragment of foot. PLATE 44. Diameter 7·5. Ring foot with double outer moulding, the lower heavier. A reserved resting surface, stripe within the foot and central disk (but for circle and dot). Impressed decoration within. Around 400.

192. Fragment of foot. FIG. 12. Diameter 7·0. An incomplete graffito on the underside of the simple ring foot.

Bolsals

193. PLATE 43, FIG. 12. Height 4·6–5·1; diameter of foot 7·3. On the shape see Corbett, op. cit. 331 f. Late fifth century.

194. PLATE 44. Diameter of foot 7·0. Profile as no. **193.** Impressed decoration within of the canonical type for this shape. Late fifth century. Other fragments of bolsals were found.

Skyphoi

195. Few fragments of foot and lip from Corinthian type skyphoi. Cf. no. **166.**

196. Fragment of the foot of an Attic type skyphos. FIG. 13. Diameter 7·0. It bears a graffito; the underside is reserved but for a circle and a dot.

197. Skyphoi of Attic type. Fragments of foot and lip ranging in date through the last quarter of the fifth century and the first half of the fourth (some lips turn out boldly; references in *Olynthus* xiii. 302 ff.).

Bowls and Dishes

198. Fragments of the body and broad flat rims of stemmed dishes of the type FIG. 11. Rim diameters up to 20·0. The larger vase illustrated had been carefully mended in antiquity with several lead clamps; the position for the holes for them had been lightly sketched by scratches across the break. The shape is not very common in Attic but cf. *CVA* Poland, iii, pls. 116, 16 and 129, 14 and decorated examples by the Dish Painter (*ARV* 534). Mid-fifth century. Fragments of two or three similar vases were found but no feet plausibly identified.

199. Fragments with deep rolled rim as FIG. 13. Several of this type ranging in rim diameter from 10·0 to 20·0. Compare the two in Poland *CVA* ii, pl. 84, 17, 18. First half of the fifth century.

200. Fragments from the rolled lips of low bowls as *Hesperia* xviii (1949) pl. 92, 60–62. Some are enhanced by light grooves on the outer part of the lip.

201. Fragment of foot. FIG. 13. Graffito on the concave moulding in the foot. Trench C: earlier fourth-century occupation.

202. Fragment of foot. PLATE 44. Diameter 6·6. Painted concave moulding at the inner junction of foot and floor (cf. no. **201**). Impressed decoration within; for the centre-piece cf. *Hesperia* xviii (1949) pl. 87, 35 and *EADélos* xxi, pl. 52, 167 (a bolsal). 430–420.

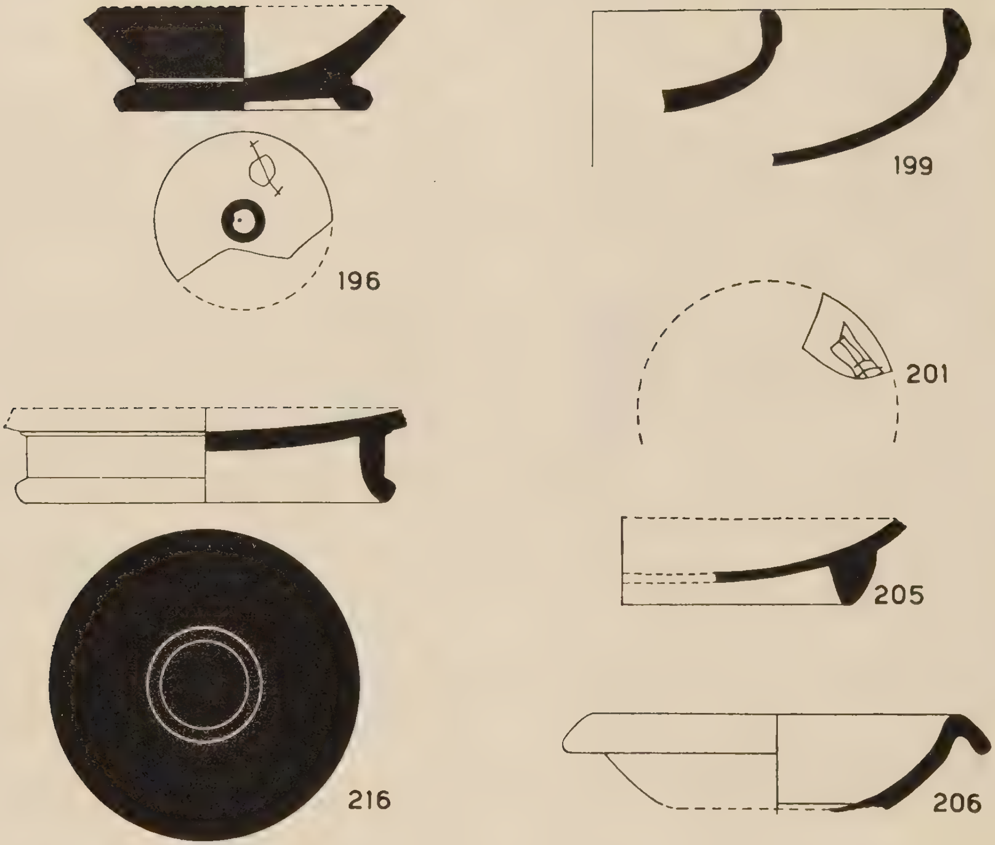

196
199
201
205
216
206

Fig. 13. Sections of black vases (1:2)

203. Fragment of foot. PLATE 44. Diameter 6·0. Profile as no. **201.** Impressed decoration within of four palmettes around a small circle.

204. Diameter at rim 8·5. Profile as *Hesperia* xviii (1949) 329, fig. 5, 63. Last quarter of the fifth century.

205. Fragment of base. FIG. 13. Painted within, as is the outer wall but for the top of the break where there is the edge of a reserved area or line, so perhaps it is a decorated vase. Reserved resting surface and under-foot but for one thin line near the circumference. Very fine fabric.

206. Fragments of lip and body. FIG. 13. A heavy overhanging lip and reserved disk within. A very similar vase in the Agora (P 23597) has a plain ring foot, no reserved disk and is dated by its context to the third quarter of the fourth century.

Askoi. Some fragments of plain askoi are lightly ribbed at the shoulder.

207. Fragmentary askos. Diameter at base 7·2. As *Olynthus* xiii, pl. 177, 469 but with a double shoulder groove as on our no. **156**, and fourteen perforations. Early fourth century.

208. Fragment of a deep askos with vertical passage as Oxford *CVA* i, pl. 140, 29. With earlier fourth-century occupation in Trench C.

Lekanai

209. Fragments of plain black lekanai lids of late fifth- and fourth-century type. Cf. no. **135.**

Amphoriskoi. On these see Beazley *BSA* xli (1940–5) 13.

210. Fragment from the lower body. PLATE 44. A row of palmettes above and below a broad groove flanked by two thin grooves. End of the fifth century. Trench C: below fourth-century occupation.

211. Fragment of the base. The tips of a row of spindly palmettes are preserved, cf. *Hesperia* iv (1935) 518, Copenhagen *CVA* iv, pl. 182, 8, 10, 11, *Materials and Researches in U.S.S.R.* xxv (1952) 27, fig. 19 (from Tyritake). Last quarter of the fifth century.

Kantharoi

212. Fragment from a fifth-century type with a sharp angle to the body at the lower handle junction.

213. Fragment from the body of a ribbed kantharos; cf. *Olynthus* xiii. 290 ff. Fourth century.

Jug

214. Fragment from a jug with petal-ribbing as *Hesperia* xviii (1949) pl. 85, 81 (ibid. 332 f. on the type) but without the stippling of the segments. The wall was bent for the ribbing. End of the fifth century.

Plates

215. Fragment of rim, as *Hesperia* xviii (1949) 325, fig. 4, 151, but rounded at the lower edge of the lip, which is lightly grooved.

216. Fragment of foot; perhaps a shallow dish. PLATE 44, FIG. 13. Diameter of foot 9·9. Painted beneath but for two incised circles one-third from the centre. Impressed decoration within: the pairs of palmettes linked by arcs is an unusual variant on the chain, cf. P. N. Ure, *Black Glaze Pottery from Rhitsona* pl. 13, 59. 17. End of the fifth century.

Phiale Mesomphalos

217. Fragment from the floor. PLATE 44. The reserved grooves at the edge form the bed for the omphalos which is missing. An example of this shape with impressed decoration is Agora P 9371. For the ovules in the arms of the arcs compare *Olynthus* v, pl. 153, 559.

Salt-cellar

218. Height 2·2. Profile as *Hesperia* xviii (1949) pl. 93, 68 with the lower wall curving more than the upper. Last quarter of the fifth century.

Attic examples of one-handlers, salt-cellars, and bowls with incurving rim will be mentioned by Mr. Cook in his publication of their Ionic imitations.

JOHN BOARDMAN

A LATE MINOAN III 'KITCHEN' AT MAKRITIKHOS (KNOSSOS)

(KNOSSOS SURVEY **90**)

(PLATES 45–48)

In the summer of 1951 N. Dadoudis, while digging a deep trench to bury stones from a plot of land belonging to him on the east edge of Makritikhos village, about 250 metres north of the Palace of Minos, found a complete Minoan amphora (Plan, FIG. 5, no. **3**). He reported this discovery to the Ephor of Antiquities for Crete, Dr. N. Platon, who invited Piet de Jong, then the School's Curator at Knossos, to examine the area. Excavation revealed a small room, against the east wall of which the amphora had evidently once stood. The room was cleared by Piet de Jong assisted later by Sinclair Hood. To judge from the character of the vases found in it, the room might have been used as a kitchen.

The ground on the edge of Makritikhos village here slopes steeply down through a series of terraces to the bed of the Kairatos stream about 40 metres to the east. The 'Kitchen' lay just below a high bank, forming the western boundary of the plot of ground, with the natural rock exposed at the north end and Minoan house walls showing in it to the south. There seems to have been a marked slope down towards the north as well as to the east here in Minoan times. The wall *a–a* (FIG. 2) at the north end of the original trench dug by Dadoudis, of squared limestone blocks measuring up to about half a metre in length and 0·35 thick, lay at a lower level than the Kitchen, although it appeared to be of the same period with it. A roughly constructed wall *b–b* south of *a–a* may have supported a terrace marking this change in ground level. The corner *d–d* of another, presumably contemporary, house built of squared limestone blocks was exposed in the south part of the original trench.

The Kitchen (Plan, FIG. 2) was rectangular, about 3·25 long and 2·20 across, entered through a small door, only 0·58 wide, in the middle of the west side (PLATE 45*a*). The threshold of the door consisted of a very large block of squared limestone (L. 1·70), while another large squared block (L. 0·96) formed the base of its south jamb. The walls apart from this were poorly built of rough rubble with occasional small fragments of squared blocks included. The squared blocks were all presumably quarried from earlier buildings in the area. The walls were preserved to a maximum height of 0·60 on the west. Except on the east side only the inner faces of the walls were cleared. The east wall *c–c* was 0·65 wide, diminishing to 0·57 at the north end, where it had been destroyed to floor level before excavation started.

The floor of the room was of trampled earth, having a rather uneven surface, with a sprinkling of pebbles and with occasional large stones, perhaps the tops of walls of older buildings beneath, exposed here and there. Three stones formed a sort of rough ledge against the north wall; the top surfaces of the centre and the most easterly of these stones seemed worn, but not apparently by rubbing or grinding in the preparation of food; on the centre stone was resting the lid no. **15** (PLATE 45*b*).

The other vases, which were either certainly or probably contemporary with the building, were found on the floor or just above it. Some, like the kylix no. **1**, lying 0·30 above the floor, may have fallen from a shelf or upper story. The vases seem best assigned to the period (Furumark's L.M. IIIA 2) immediately following the destruction of the L.M. II Palace about 1400

B.C. The fragments of fine decorated vases from the ruin-fill mostly belong to the same general horizon, with some possible earlier and later elements.

A small high column base of limestone (diam. at top 0·20–0·21, at bottom 0·21–0·27, ht. 0·18–0·19), rather roughly finished with the top slightly concave, was found lying on its side just above the floor level in the southern part of the room (see PLATE 45*a*). It may have fallen from the floor above, like a similar column base in the L.M. II House of the Chancel Screen.[1]

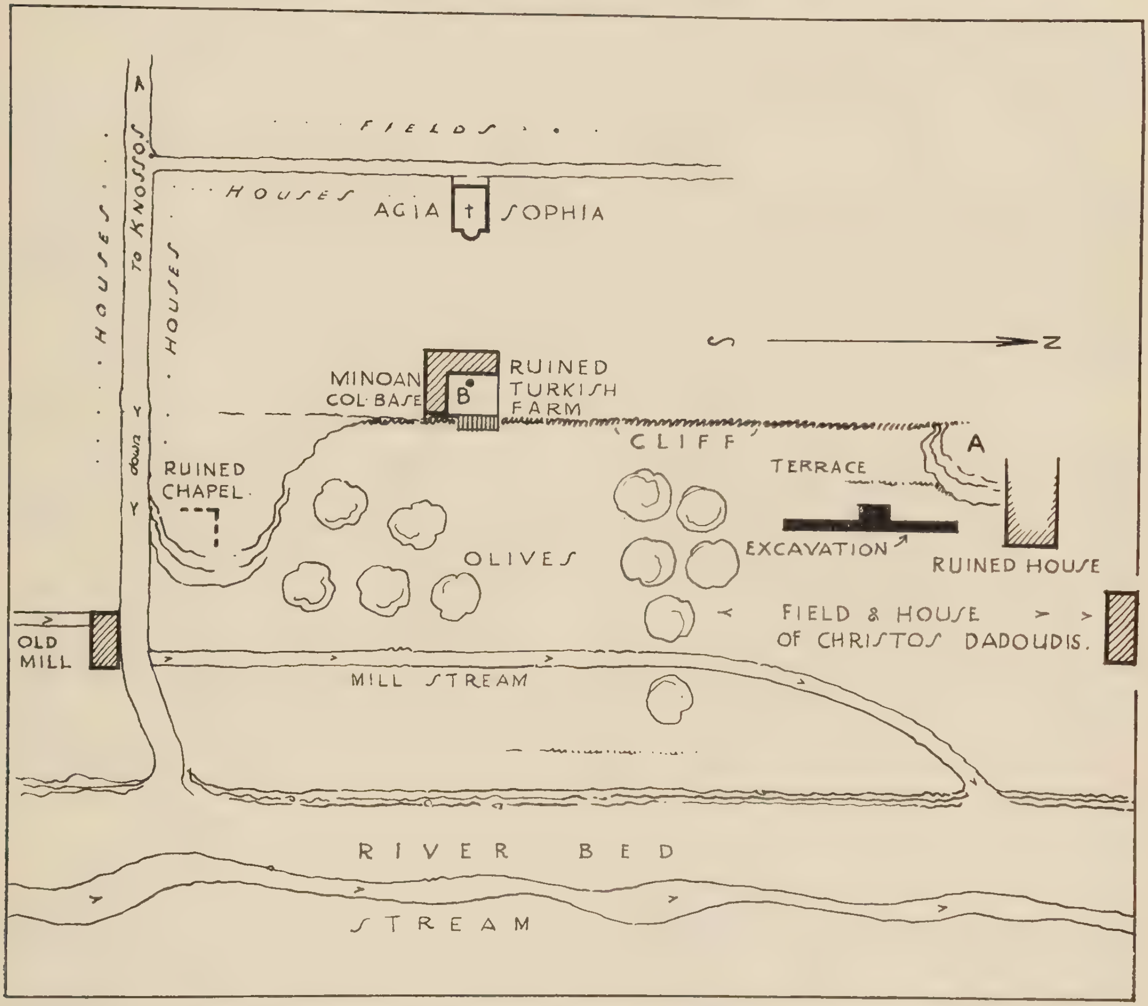

FIELDS
HOUSES
AGIA SOPHIA
TO KNOSSOS
HOUSES
HOUSES
down
S
N
MINOAN COL·BASE
B
RUINED TURKISH FARM
CLIFF
A
TERRACE
RUINED CHAPEL
OLIVES
EXCAVATION
RUINED HOUSE
FIELD & HOUSE OF CHRISTOS DADOUDIS.
OLD MILL
MILL STREAM
RIVER BED
STREAM

FIG. 1. NORTH-EAST EDGE OF MAKRITIKHOS VILLAGE, SHOWING POSITION OF SITE

A fine tall column base (ht. *c.* 0·30, diam. of top 0·46), of hard light blue-grey limestone with white veins, is preserved in the court of a farm-house a few metres away to the south-west (B on Plan, FIG. 1). It may have wandered from the Palace or from some great mansion in the area.

An interesting discovery was the bent fore-arm of a large stone statuette (no. **37**, FIG. 9, PLATE 47*d*), gathered by Piet de Jong from a pile of stones just to the north of the area excavated.

---

[1] Room 10 (Pillar-Crypt), *PM* ii. 393. (See p. 194 for abbreviations additional to those normally used in the Annual.)

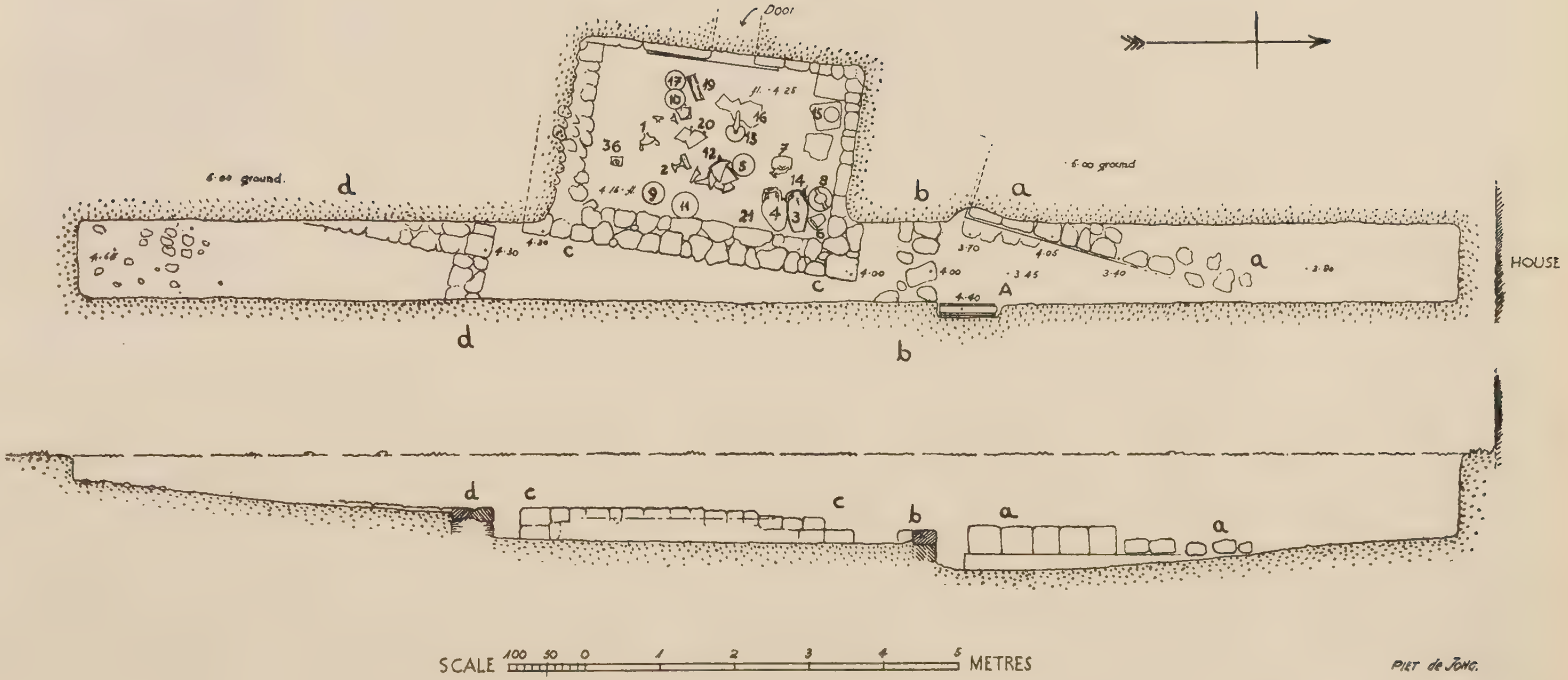

Door
fl. 4·25
6·00 ground
6·00 ground.
HOUSE
a
b
c
d
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
19
20
21
36
4·16
4·68
4·30
4·30
4·00
4·00
3·70
3·45
4·05
3·40
4·40
2·80
SCALE
100
50
0
1
2
3
4
5
METRES
PIET de JONG.

Fig. 2. Plan and section

The existence here of comparatively well-preserved houses of the Re-occupation period (after the destruction of the L.M. II Palace *c.* 1400 B.C.) is noteworthy. There may also be good deposits of earlier periods beneath; but no attempt was made to dig below the L.M. III level.

The Pottery

The vases from the Kitchen, although mostly of plain domestic ware, are interesting for comparison with collections of similar vases like those from the Potter's Shop at Zygouries[2] and the House of the Sphinxes at Mycenae.[3] The great tripod cauldron (no. **12**) indeed is probably as large as anything of the kind that has yet been recovered intact, whether in Crete or on the Mainland.

The one finely decorated vase (no. **7**) is of a peculiar and unusual shape. But the distinctive shoulder design, derived ultimately from papyrus, suggests a date for it in Furumark's L.M. IIIA 2 after the destruction of the L.M. II Palace. The other complete vases which appear to belong to the Kitchen (nos. **1**–**6**, **7**–**16**) seem consistent with this date.

The kylikes (nos **1** and **2**) are particularly important, because few examples of the high-stemmed type are published from Crete. But at Knossos at any rate fragments of high-stemmed kylikes are very abundant in occupation deposits from the early part of the Late Minoan III period and onwards, although they seem rare in tombs.[4]

The kylix no. **2** has a marked hollow space inside the stem. This feature appears to be very characteristic in the high kylix stems found at Knossos, although the hole is sometimes closed at the bottom, so that it would not show in a complete and unbroken vase. It is as if a stick had been pushed down the middle of the stem while the clay was still wet, and the hollow may have been designed to facilitate the firing of the thick stem by creating an air space inside it; or it may simply be derived from the hollow stems commonly found on the earlier low type of Late Minoan goblets akin to the 'Ephyraean' goblets of the mainland.[5]

A section through the foot of a typical L.M. II goblet from Knossos is given in *BSA* xlvii. 263, fig. 9, I. 2. In FIG. 3 below is a further selection from the Kitchen fill of varieties of this early type, but not all necessarily of early date, since the type persists well into L.M. III in the Knossos area. The goblets to which they belonged may have had one or two handles.[6]

INVENTORY OF VASES AND OTHER OBJECTS

A. *Vases from the Kitchen*

1. Kylix with two high swung handles (FIG. 5, PLATE 45*c*, *e*). Broken, but complete except for one handle missing. Ht. 0·17. Diam. 0·165. Fine orange clay with a buff surface, well smoothed or burnished inside and outside. Undecorated. Found lying on its side about 0·30 above the floor. Possibly therefore either from an upper floor like the column base (p. 183), or among rubbish filling the ruins after the destruction of the building.

This type of plain kylix corresponds to Type 273 of Furumark, who cites examples from Mycenae, Asine, and Korakou, and assigns them to Myc. IIIA 2 *late* and IIIB. Add several from *Prosymna*: (1) T. xxxiii, no. 1089 (pl. 239) from the side chamber: probably the initial phase of L.H. III. (2) T. xxxviii, no. 754 (pl. 305): L.H. III. (3) T. xli, esp. no. 788 (pl. 353): L.H. III, although perhaps the beginning of that period.

Published examples from Crete include one from Gournes (*ADelt* iv (1918) 75, fig. 19, 2) which according to Furumark is L.M. IIIB 1.

In Crete a late version of this type is also known with decoration, e.g. Milatos (*PT* 96–97, fig. 105 D, 106 M; L.M. IIIB 2 (Furumark)).

---

[2] Blegen, *Zygouries* (1928) 30 f.

[3] *BSA* xlix (1954) 238 f.; l (1955) 185 f.

[4] Furumark's observation (*MP* 64) about the comparative rarity of stemmed cups in Crete during L.M. III does not therefore hold good for Knossos, although it may be true for some parts of the island.

[5] *PM* iv. 36.

[6] For examples of plain Minoan goblets of this low type, see *PAE* 1952 (1955) 628, fig. 8, from Stamnioi in Pediada south of Knossos, with decorated vases which look L.M. IIIA 2. Cf. *ADelt* ii (1916) 67, fig. 11, 75, fig. 19, 85, fig. 32, from Gournes east of Knossos.

2. Kylix with two handles (FIG. 5). Broken, and nearly half of bowl missing. Ht. 0·175. Diam. 0·157. As no. **1**, but less elegant in style, with drooping handles, and the fabric less fine. Orange clay, dusky at the core, with a good deal of grit, of which some is large, dominantly in shades of brown and showing in the surface, which is smoothed or burnished inside and outside. Found lying on its side about 0·15 above floor.

This corresponds to Furumark's Type 266, with one example from Asine (Frödin and Persson, *Asine* 369, fig. 235) of Myc. IIIA 1, but mostly IIIA 2 and some later. Cf. Stubbings's Type F (*BSA* xlii. 30–31), which (does) 'not seem common in Attica. . . . Not common in the Argolid.' Add to Furumark's list *Prosymna* T. xv, no. 104 (pl. 425): L.H. III; T. xxi, nos. 265, 271 (pls. 125–6), which Blegen dates to an early phase of L.H. III; T. xxxiii, no. 1066 (pl. 235): L.H. III; T. xxxvii, no. 720 (pl. 296): early L.H. III. This plain kylix corresponds in shape to the Zygouries type of decorated kylix (e.g. Blegen, *Zygouries* fig. 135, nos. 47, 62), which is Stubbings's Type E and Furumark's Type 258.

This type has counterparts in metal, e.g. the bronze kylix from the Tomb of the Tripod Hearth at Knossos (*PT* 43, no. 14*n* = *PM* iv, fig. 305*b*).[7] The date proposed by Evans (*PM* ii. 265) in 'the last age of the Palace', i.e. L.M. II or IIIA 1 at latest, is probably too early. Furumark (*MP* 58) suggests 'a later date, probably corresponding to the later part of Myc. IIIA 2'.

3. Amphora with narrow oval mouth (FIG. 5, PLATE 45*f*). Complete and unbroken, except for a hole made by the pick at the time of discovery. Ht. 0·38. Diam. of body 0·235. Orange clay with fine black and occasional white grit, together with large (some very large) orange grit showing in the surface, which is a paler shade of orange to buff, possibly due to wet-smoothing. Decoration in light, shading to dark brown, rather matt paint. The neck painted solid; a vertical wiggly stripe on each shoulder, and horizontal bands round the body; the handles striped. Found by N. Dadoudis before excavation, apparently lying on the floor on its side.

The amphora with an oval pinched-in mouth is a standard type of container for liquids in Crete throughout the Middle Minoan period from M.M. I onwards. Rare examples from the mainland, some of them at any rate perhaps imports from Crete, all appear to date from late Middle Helladic or Late Helladic I–II.[8] It is interesting to find this type still in use at Knossos as late as L.M. III.

4. Amphora with round mouth (FIG. 5, PLATE 45*f*). Broken, but nearly complete. Ht. 0·405. Diam. of rim 0·12, of body 0·29. Gritty orange clay; the grit dominantly orange or grey, fairly large and showing everywhere in the surface which is buff as if by the application of a thin wash rather than wet-smoothing. Found lying on the floor on its side.

There are several similar from Palaikastro, assigned by Furumark to L.M. IIIB 1 (*Palaikastro* 112, fig. 97). Examples from the mainland (Furumark's Type 109, with a range from Myc. I–IIIB) do not appear to be exactly comparable in shape.

5. Small amphora with round mouth (FIG. 5, PLATE 45*c*, *d*). Broken, and parts missing. Ht. 0·164. Diam. of rim 0·065, of body 0·134. Fine orange clay with occasional grit, dominantly black, showing in the surface, which was plain, evidently once smoothed or burnished but now much worn. Found below no. **12.**

6. Small amphora, as no. **5.** Broken and large parts missing, including most of upper part of body and all rim. Ht. preserved 0·165. Diam. of body 0·132. Coarse fabric; reddish clay with abundant grit (some very large) of all colours, especially whitish and black, showing in the surface, which is plain, rather uneven and not treated. Found lying on its side about 0·10 above floor.

7. Spouted cylindrical jar with side handles (FIG. 6, PLATE 48*b*). Parts missing, including all of rim. Ht. preserved 0·18. Diam. of body 0·20. Fine orange clay with buff surface well smoothed or burnished. Decorated in dark reddish-brown lustrous paint with a row of free-standing spirals round the body between bands above and below, and devolved papyrus-type designs on the shoulder; neck and spout painted solid; bands along handles. 'Metallic' ridges down handles, and rib round base of neck. Lying broken on its side on floor.

For the shape, compare *Gournia* pl. vii, 7, which is also decorated with spirals, but is somewhat earlier. The spirals on the body in a general way approximate to the Myc. IIIA varieties of Furumark's Curve-stemmed Spiral (*MP* Motive no. 49). For the shoulder decoration derived from papyrus, see *MP* Motive no. 11 and p. 185. Cf. *PM* iv. 1017, fig. 965*h*, from the Temple Tomb: Late Memorial Cult, which Furumark assigns to L.M. IIIA 1.

8. Jug with open spout (FIG. 6, PLATE 47*b*). Broken and parts missing. Ht. to rim about 0·225. Diam. of rim 0·12, of body 0·22. Soft flaky fabric. Greenish-orange clay with a pale-greenish surface which, although a good deal perished and worn, was evidently once smoothed or burnished. Some grit of various colours, including black and white. Faint traces of decoration in dark brown or black lustrous paint; wavy band round neck; triple wavy band round upper part of body with five dips and a heavy central swag in each dip; triple horizontal bands round waist and a thick band round base. Standing upright on floor.

For the type, cf. *Palaikastro* 111, fig. 96*b*, with blot and trickle ornament, but from a late context (L.M. IIIB?); also ibid. 80, fig. 64 L.M. IIIA 2 (Furumark), and *Gournia* pl. x, 25. For the bridge-spouted/variety of similar shape, cf. *Palaikastro* 78, fig. 62: L.M. IIIA 1 (Furumark).

9. Small handleless bowl (FIG. 6, PLATE 45*c*). Broken and parts missing. Ht. 0·055. Diam. 0·135. Wheel-made with concentric string marks under the base. Fine orange clay, dusky in places owing to a freak of firing.

For this common L.M. type of conical bowl, see (e.g.), *BSA* xxviii. 292, citing II. 3, V. 23 on pl. xxiii. This corresponds to Furumark's Type 204, with a range from Myc. I–IIIB. It is discussed by Wace (*BSA* xxv. 150–1), and is very characteristic of L.H. I–II deposits at Mycenae.

10. As no. **9** but smaller (FIG. 6, PLATES 45*c*, 47*e*). Broken and parts missing. Ht. 0·037. Diam. 0·105. Orange clay.

---

[7] Furumark would rather equate this with his Type 265, having a deeper bowl than Type 266. All the examples of Type 265 are ascribed by him to Myc. IIIA 2 (late).

[8] See *MP* Type 71. Interesting is the fragment of one found in the early tholos tomb at Koryphasion near Pylos (*Hesperia* xxiii (1954) 161, pl. 38*a*).

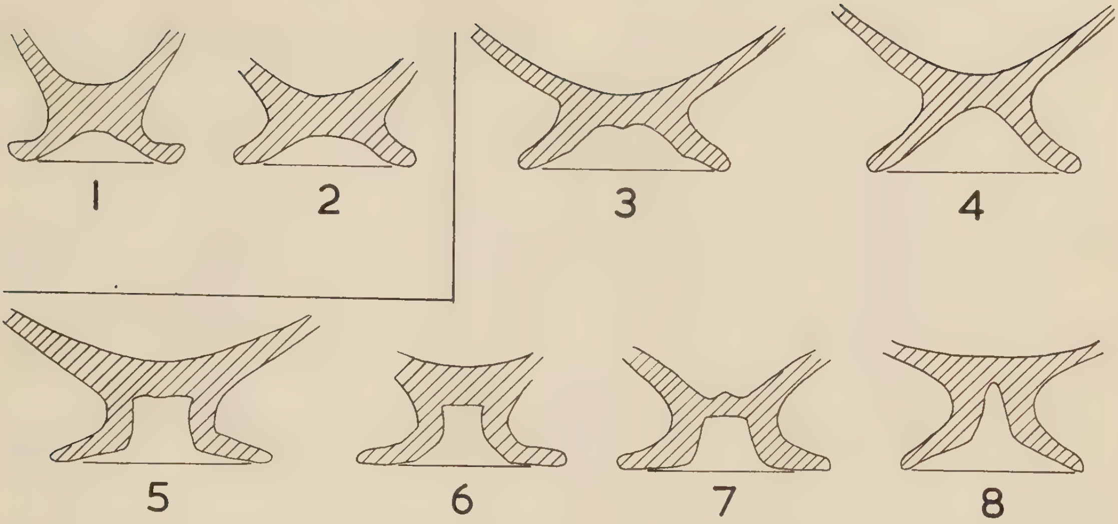


Fig. 3. Nos. 3–8. Feet of low-stemmed goblets. Nos. 1–2 Middle Minoan ‘egg-cup’ feet for comparison (1:2)

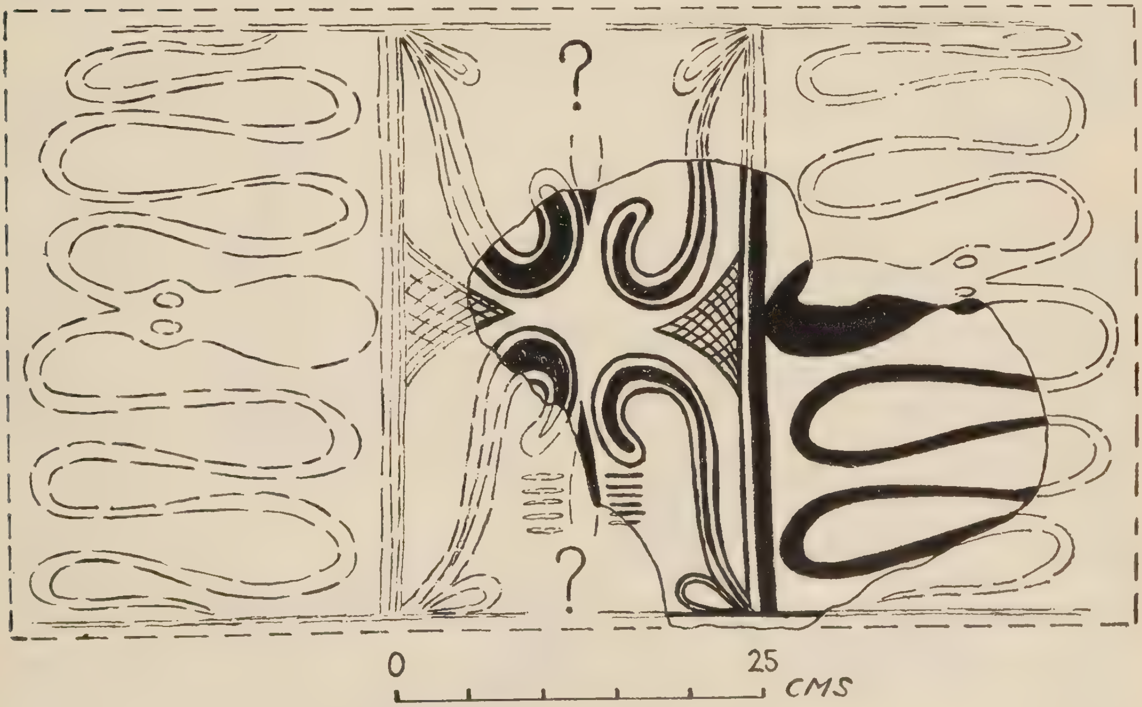


Fig. 4. Fragment of larnax 20

Two other virtually complete but slightly smaller examples of this type were found.

11. Large bowl with two side handles (FIG. 5, PLATES 45*c*, 46*e*). Broken but nearly complete. Ht. 0·105. Diam. 0·28. Wheel-made, with horizontal fluting from the fast wheel very visible on the inside. Fabric and finish exactly like no. **15**. Resting on the floor.

This is somewhat like vases from the mainland of Furumark's Type 295 (Myc. IIIA 1 onwards), but these, normally at least, appear to have strap handles rectangular in section, not circular like those on our vase.

12. Large tripod cooking-pot with two side handles (FIG. 6; PLATE 46*a*). Broken, and parts (including one leg) missing. Ht. 0·54. Diam. of rim 0·25, of body 0·45. Gritty red clay, as nos. **11** and **13**, with a rough surface. Abundant grit, dominantly white and grey in colour. Found lying on the floor in ruins.

Tripod cooking-pots of one type or another are very common at Knossos, and large numbers of feet from them are found in occupation deposits of M.M. IA onwards. For the shape in general, cf. *Gournia* pl. ii, 72 (Ht. 0·22), with the same arrangement of the handles as our vase. Compare Furumark's Type 320, but his mainland examples are smaller and all very late (Myc. IIIC), with a different arrangement of the handles. But some tripod cooking-pots are mentioned by Blegen at Korakou in L.H. II, and they are not at all rare there in L.H. III (*Korakou* 59, 74). Add to Furumark's list *BSA* xlix, pl. 37*c*, from the House of the Sphinxes at Mycenae, which is presumably L.H. IIIB.

13. Large lamp or chafing dish with handle (FIG. 5, PLATES 45*c*, 47*a*). Broken but complete. Overall L. 0·32. W. 0·26. The rim pinched-in and raised to protect the handle from the heat; the handle with a large perforation, perhaps for hanging the vase on a peg set in the wall. Wheel-made with marks of the fast wheel very visible on the inside surface. Gritty red clay, the grit (some large) very abundant, of all colours, especially whitish and grey, and showing in the surface, which is rough. Resting upright about 0·18 above the floor.

Cf. Furumark's Type 312, e.g. *Zygouries* fig. 156, nos. 407, 410, from the Potter's Shop (Myc. IIIB), five in all, but rather smaller than our vase. Add *BSA* l, pl. 29*b*, from the House of the Sphinxes at Mycenae, which looks similar and is also Myc. IIIB.

14. Ladle or dipper with pointed bottom and high swung handle (FIG. 5, PLATES 45*c*, 47*e*). Complete except for handle missing. Ht. 0·035. Diam. 0·087. Fine orange clay with a buff surface well smoothed or burnished inside and outside. Found lying on its side about 0·10 above the floor.

Compare Furumark's Type 236 (Myc. IIB onwards), especially no. 9 from Ialysos NT 4: 14 (*Ann.* 6, 99, fig. 14), which is similar but not exactly comparable, as it has a small base. Add *Prosymna* fig. 125, no. 235: tomb xxi. Cf. *PM* i. 384, fig. 279 F, from the Palace at Knossos, an example which is assigned by Furumark to L.M. IIIB 1 (*ChronP* 105).

15. Lid with handle (FIG. 5, PLATE 48*b*). Broken but complete. Ht. without handle 0·05. Diam. *c.* 0·17. Gritty orange clay, with the grit dominantly orange or grey and showing everywhere in the surface, which is orange, wet-smoothed or burnished on the outside, but untreated on the inside. Decorated in red, shading to dark-brown, lustrous paint with bands round the sides and concentric bands on top; the decoration much worn. Resting right way up on the floor.

The type goes back to Middle Minoan times in Crete, e.g. *Gournia* pl. ii, 43.

16. Small pithos (FIG. 7). Broken and large parts missing. Ht. 0·63. Diam. 0·44. Originally with four strap handles on the shoulder. Two broad bands of boldly incised decoration round the body. Lying in ruins above the floor.

B. *Vases and Objects from fill inside and outside Kitchen*

17. Small jug (FIG. 6, PLATES 45*c*, 46*d*). Broken but complete. Ht. 0·085. Diam. of body 0·09. Orange-buff clay with abundant grit, white, grey, reddish, &c. Below no. **19** in the Kitchen.

18. Pedestal bowl (FIG. 6). Lower part of foot missing. Ht. preserved 0·16. Diam. 0·285. Gritty red clay like nos. **11**, **12**, and **13**, with abundant grit, shades of white, grey, red, &c., showing in the surface. From original trench north of the Kitchen (see Plan, FIG. 2).

Compare an example from the Mavro Spelio cemetery at Knossos (*BSA* xxviii, pl. xxiii, T. xx, 7), described as a 'brazier or flat-lipped cup with hollow conical foot. Rough red ware'. This was the only vase from a shaft-grave containing a larnax burial. Another from a tomb at Episkopi (Pedhiadha) appears to be L.M. III (*PAE* 1952 (1955), 622, fig. 3).

On the mainland somewhat comparable is Furumark's Type 307; but the only example cited by him, from Mycenae (*ChTs* 79, T. 518, 9), is assigned to Myc. IIA (L.H. I according to Wace), and is decorated.

It is interesting to note that similar vases were found in Late Bronze Age contexts at Ras Shamra (Schaeffer, *Ugaritica* ii, fig. 116, 1–12).

19. Drain channel (FIG. 7, PLATE 47*f*). Broken and parts missing. L. 0·56. W. 0·23. Ht. 0·14. Coarse gritty orange clay, the grit dominantly greyish, and showing together with straw impressions in the surface. Lying on its side about 0·32 above the floor.

A second drain channel, similar but with a projecting tongue at one end, was found at a depth of 0·60 in the original trench just north of the Kitchen (A on Plan, FIG. 2). For such drain channels see Palaikastro (*BSA* xi. 289, fig. 16: L.M. I–III. Cf. *BSA* xxx. 55–56, fig. 2, pl. xi, 3, under the West Court of the Palace at Knossos, which must be M.M.).

20. Fragment of a bath or larnax (FIG. 4, PLATE 46*b*). 0·29×0·37. Very gritty greenish-orange clay, with grit (some large) distinctly white, red, and grey, and showing in the surface, which is burnished, with marks of the burnishing implement clearly visible inside and outside. Decorated in light, shading to dark brown and black, lustrous paint. The fragment appears to come from the long side of a bath or larnax, with a central panel bearing a disintegrated lily or papyrus design, flanked by stylized octopuses. From fill of Kitchen. Fragments of a large thick base of similar fabric also found here may have belonged with this.

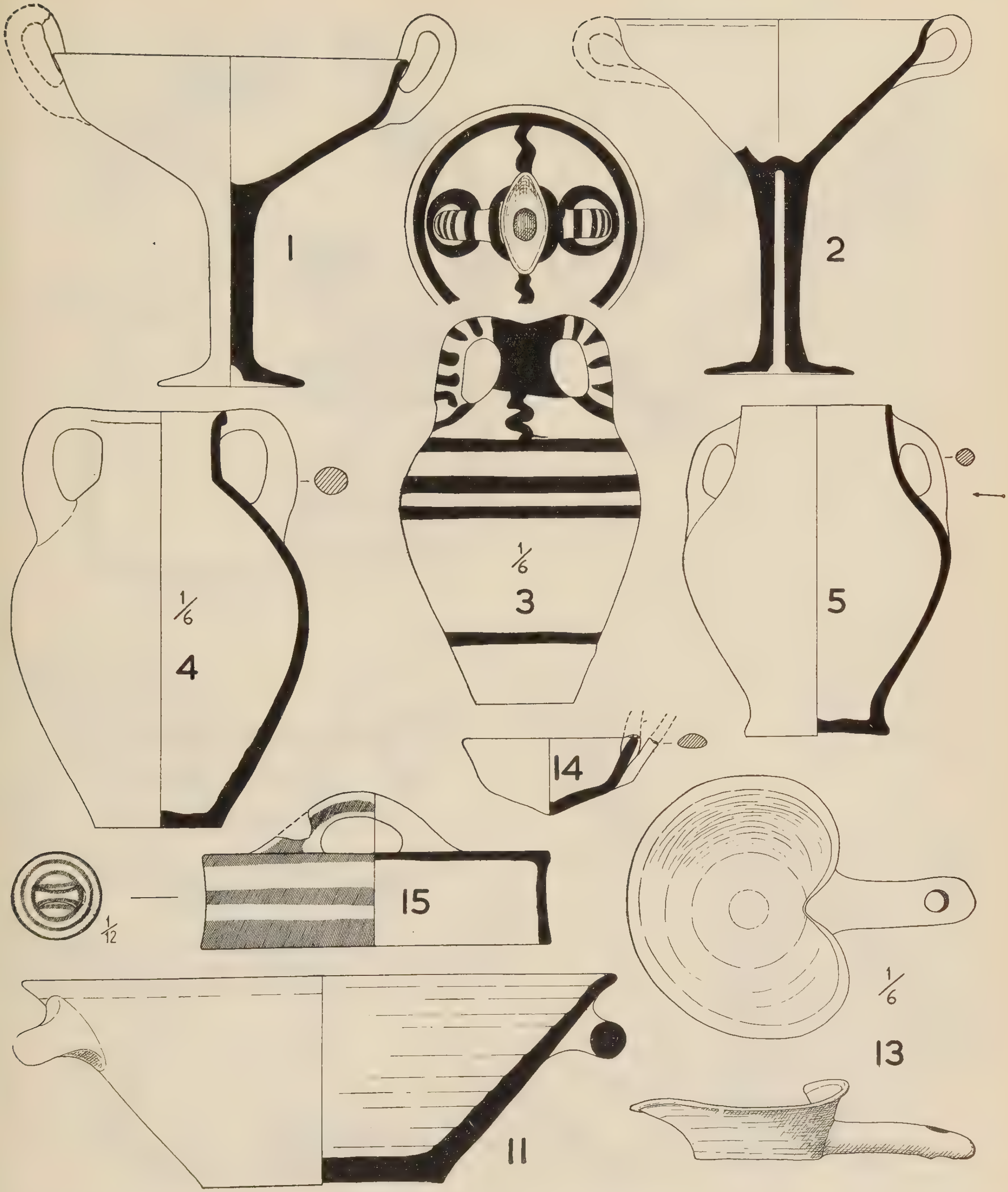

1
2
1/6
3
1/6
4
5
14
1/12
15
1/6
13
11

FIG. 5. VASES (1:3 UNLESS OTHERWISE STATED)

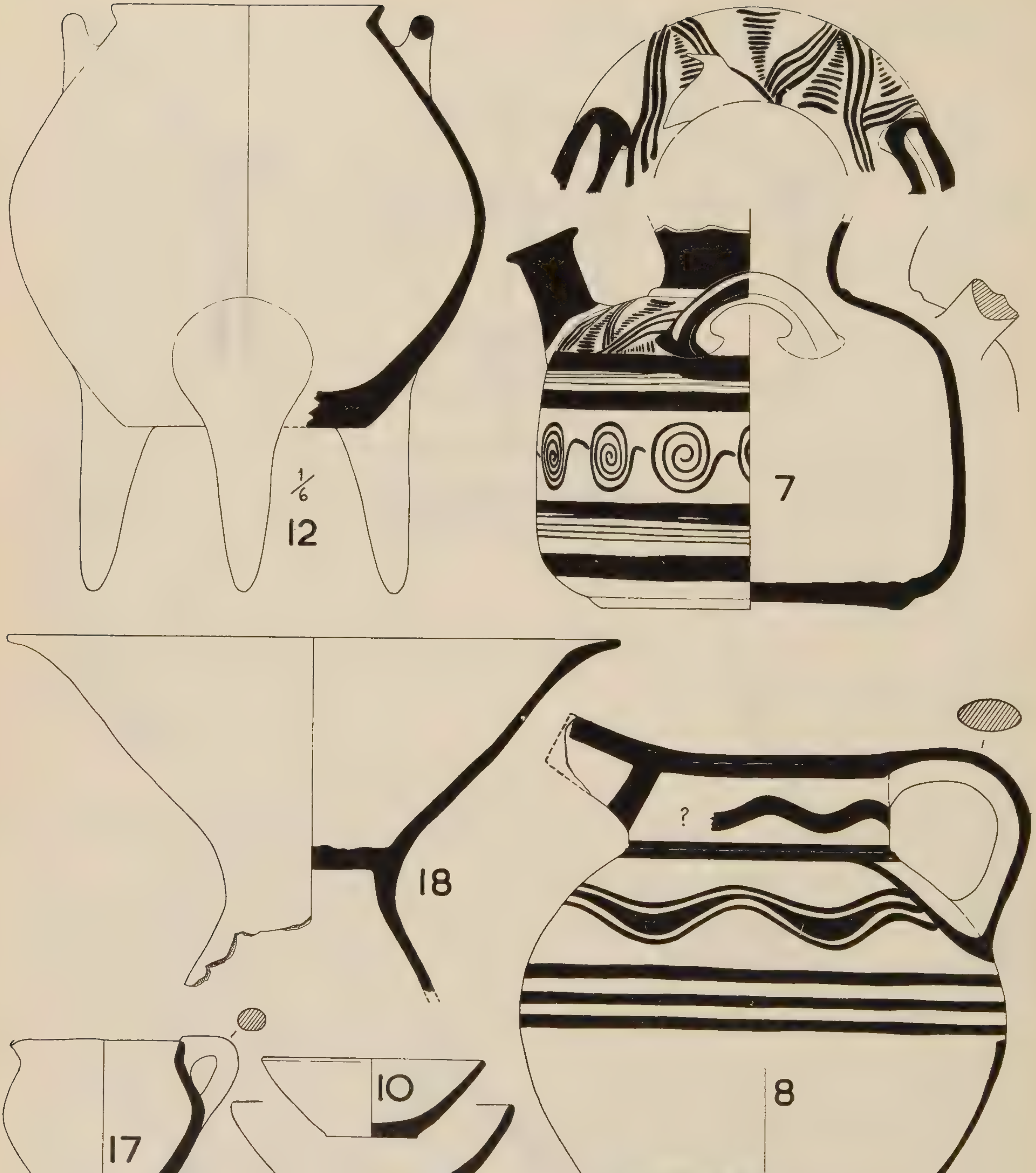

1/6
12
7
18
?
8
17
10
9

Fig. 6. Vases (1:3 unless otherwise stated)

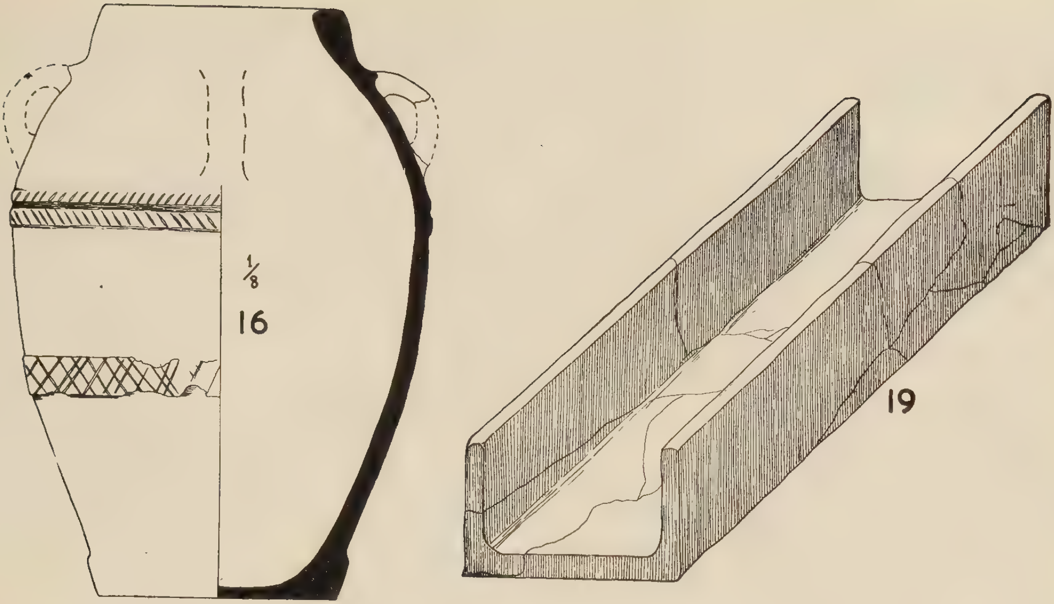


Fig. 7. Pithos (1:8) and drain channel (1:4)

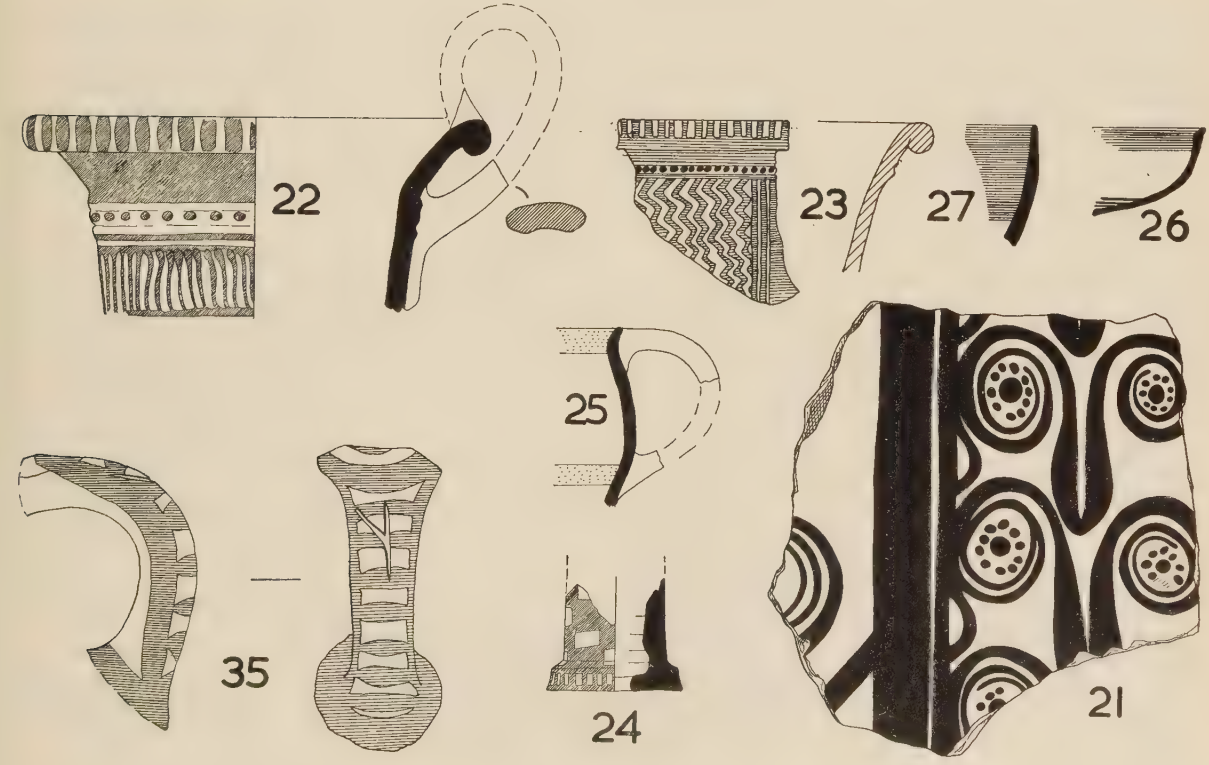

22
23
27
26
25
21
35
24

Fig. 8. Sherds from fill of Kitchen (1:3)

For the octopuses cf. *Palaikastro* 106–7, figs. 89, 92, both L.M. IIIB I (Furumark). For the hatched triangles cf. *MP* Motive no. 61A, 4 (Myc. IIIC I), of which the examples cited by Furumark are from Rhodes, Amorgos, and Mycenae (one). Hatching is common on Cretan vases of L.M. IIIB.

21. Curved fragment from a large decorated jar, or possibly from no. **20**, which it resembles in fabric (FIG. 8, PLATE 46*c*). 0·16×0·18. As no. **20**, but the outside surface is pale greenish-buff in colour, well smoothed or burnished. Decorated in black lustrous paint, very much worn, with spiral ornament. From fill of Kitchen.

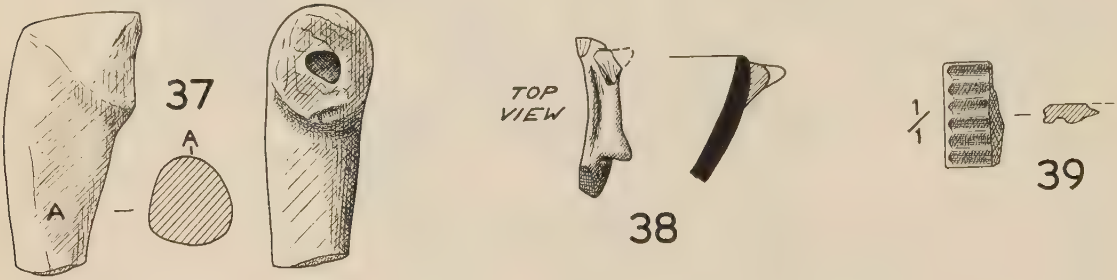


FIG. 9. **37** (1:2), **38** (1:2), **39** (1:1)

22. Rim of rhyton with stump of handle preserved (FIG. 8, PLATE 48*a*). Orange clay with decoration in lustrous red-brown. From fill of Kitchen.

The handle set thus below the rim and rising above it corresponds to Furumark's earlier type characteristic of the period before Myc. IIIA 2 (*MP* 71–72). Cf. *BSA* vi. 74, fig. 16: L.M. IIIA I (Furumark), from Hogarth's House A at Knossos, which has decoration somewhat similar to our rim. Add the fine rhyton from tomb I on Gypsades assignable to the same period (p. 245, PLATE 54*c*).

23. Rim of rhyton (FIG. 8, PLATE 48*a*). Warm buff surface smoothed or burnished, with decoration in dark brown to black, much worn.[9]

For the zone of vertical zig-zags cf. *PM* iv. 1017, fig. 965*n*, from the Temple Tomb: Late Memorial Cult, and PT 120, fig. 114, 25*a*, both L.M. IIIA 2 (Furumark).

24. Base of ?rhyton with hole in centre (FIG. 8). Orange clay with buff surface smoothed or burnished, decorated in thick red brown.

The chequer decoration is interesting, since it occurs on an early type of stemmed cup from Mycenae (*MP* Motive no. 56, 1 = *ChTs* pl. xli, T. 518, 33), assigned by Wace and Furumark to L.H./Myc. I. Furumark notes that this motive 'appears to be absent in the L.M. I repertory' of Crete, 'but occurs in the M.H. decoration'. Triglyphs or panels filled with chequers are relatively common in Myc. IIIB and C I according to Furumark. To the L.M. III examples of this type that he cites from Crete (*MP* 203) add the fine pyxis with birds among flowers from Pachiammo (*KCh* 8 (1954) 403, no. 4, pl. z, 2) dated by Alexiou to L.M. IIIA 2.

25. Rim of cup with handle (FIG. 8, PLATE 48*a*). Orange clay with decoration in light red-brown. Bands inside.

Compare *PM* iv. 1017, fig. 965*m*: L.M. IIIA 2 (Furumark).

26. Rim of cup (FIG. 8, PLATE 48*a*). Fine buff surface, smoothed or burnished; decorated with a wavy line in dark brown; bands inside.

For the decoration cf. *MP* Motive no. 53; esp. 4 (Myc. IIIA 1–2). The shape seems to correspond to Furumark's Type 220.

For a similar cup-rim decorated like ours at Knossos, see *PM* iv. 1009, fig. 960*e*, from the Temple Tomb: Later Sepulchral Deposit, which is L.M. IIIA I (Furumark).

There is another closely similar from Amarna (Petrie, *Tell el Amarna* pl. xxvi, 13 and 15 = *BM Cat* A 994), and two from Cyprus (*BM Cat* A 632; *Swedish Cyprus Expedition* i. 508, Enkomi T. 10, 33), all cited by Furumark under Type 220.

A fragment of rim recently published from Mycenae has this same type of decoration (*BSA* xlix. pl. 28, 7 and p. 276: 'Wavy Line').

27. Rim of cup (FIG. 8, PLATE 48*a*). Fine buff surface, smoothed or burnished; decorated with a band of quirks between rows of dots in dark brown; solid brown inside.

An almost identical cup-rim from the Royal Villa at Knossos (*BSA* ix. 153, fig. 92*d*) is ascribed by Evans to the Reoccupation period, and by Furumark to L.M. IIIA 2. The motive is *MP* no. 48, esp. 5 (Myc. I–IIIC 1).

28. Rim of cup (PLATE 48*a*). Pale greenish-buff clay decorated in black; hatching on the rim; inside plain and unpainted.

For the rim hatching cf. *PM* iv. 1017, fig. 965*a*, from the Temple Tomb: Late Memorial Cult, which is L.M. IIIA 2 (Furumark).

29. Fragment of under side of stemmed goblet (PLATE 48*a*). Orange clay with orange-buff surface decorated in dark brown; inside painted solid.

30. Fragment of large cup, probably a stemmed goblet (PLATE 48*a*). Decorated in dark brown to black; inside painted solid.

---

[9] Nos. 23–36 are unstratified, from the fill of the Kitchen or of the original trench dug by Dadoudis.

31. Fragment of cup (PLATE 48*a*). Buff surface decorated in red-brown; inside with horizontal bands; outside with argonaut design.

For the decoration cf. *MP* Motive no. 22.

32. Fragment of cup (PLATE 48*a*). Buff surface decorated in dark brown; inside painted solid.

33. Fragment of cup (PLATE 48*a*). Decorated in reddish-brown; inside painted solid; outside with a net pattern.

For the decoration cf. *MP* Motive no. 62: Tri-curved Arch, esp. 9 (Myc. IIB), which according to Furumark (ibid. 392) is of Minoan character, with a filling ornament which represents a 'specifically Minoan reduction of the papyrus'. Cf. (e.g.) *PM* iv. 1017, fig. 965*i*, from the Temple Tomb: Late Memorial Cult, which is L.M. IIIA 1 (Furumark).

34. Fragment from a closed vase (PLATE 48*a*). Buff surface, decorated in dark brown to black. Plant design perhaps of late character, cf. Furumark in *Op. Arch.* vi. 166–7, and n. 12, no. 107.

35. Handle of large stirrup vase (FIG. 8, PLATE 47*c*). Gritty orange clay with a dusky greyish surface, decorated in black. Boldly cut sign made after firing of vase.

The sign appears to be AB 1 (*Scripta Minoa* ii. 6). For signs incised on vases from the Aegean, see (e.g.) Schaeffer, *Ugaritica* ii, fig. 96, 13, 19.[10]

36. Large strap handle (PLATE 47*c*), presumably from a pithos, with a bold spiral drawn with the finger while the clay was wet.

37. Fragment, evidently the elbow and forearm of a large statuette (FIG. 9, PLATE 47*d*). The hand is broken away and missing. L. (preserved) 0·07. There is a hollow in the upper arm for a dowel to fix it to the shoulder. Found by P. de Jong on a stone pile at the north-west corner of the Kitchen field (A on Plan, FIG. 1).

For the existence in Crete of large stone statuettes, which may have been manufactured in several pieces, see *PM* iii. 518, fig. 263; iv. 194.

38. Rim of stone bowl with horned lug (FIG. 9). Grey steatite. L. 0·042.

39. Fragment of bone decorated with notches (FIG. 9). Probably an inlay of some kind. L. 0·014. W. preserved 0·06. Groove along the edge, and part of a hollow for a dowel or pin on the broken under side. From the Kitchen, under vase no. **11**.

---

[10] I am grateful to Mr. N. Boufidis for this reference, and for discussing the sign with me (S. H.).

SINCLAIR HOOD
PIET DE JONG

A MINOAN CEMETERY ON UPPER GYPSADES

(KNOSSOS SURVEY **156**)

(PLATES 49–63)

IN the autumn of 1954 a hole appeared in a field which was being deep ploughed for the planting of a new vineyard high on the north-east slopes of Upper Gypsades, the most southerly of the two Gypsades ridges, just beyond the cutting for the Venetian aqueduct through the saddle which joins them, and about a kilometre south of the Minoan Palace. The hole had evidently been formed by the partial collapse of a tomb chamber, and Dr. Platon, the Ephor of Antiquities for Crete, with his usual courtesy invited the School to undertake its exploration, since the field lies inside the Knossos area. It was decided to take the opportunity of making trials in the rest of the field to search for other tombs, since it would not be possible to excavate here for many years afterwards owing to the vines. In spite of the fact that the field was already planted with new vine-shoots, the owner, Mr. G. Gialitakis of Herakleion, most generously gave permission for the excavations, which were completed during the months of August, September, and October 1955 by Sinclair Hood, George Huxley, and Nancy Sandars, helped for a considerable part of the time by Mr. R. W. Hutchinson, whose experience and knowledge were invaluable. Between six and ten workmen were employed under the general supervision of the School's foreman, Manoli Markoyiannakis. The tomb plans and the drawings of the small finds and of some of the vases were made by John Carswell, the drawings of many of the decorated vases by Nancy Dykes; the pencil drawings of the seals are by Piet de Jong.

THE CEMETERY

(PLAN, FIG. 1; PLATE 49*a*)

The existence of Late Minoan tombs somewhere in this area was noted by Evans,[1] and several of those found during our excavations had been partly destroyed or plundered. Nineteen tombs were discovered in all. One of them (XVIII) was a Middle Minoan tomb (see p. 220). The rest

ACKNOWLEDGEMENTS. We are most grateful to Dr. N. Platon and to Mr. S. Alexiou of Herakleion Museum for all their ready help and co-operation at all stages of the work. To Dr. J. Trevor of the Duckworth Laboratory, Cambridge, we are indebted for examining those of the human skeletal remains which had been recovered from the excavations before he left Crete; to the Rev. V. E. G. Kenna we are much obliged for an opinion based upon photographs and descriptions of the four sealstones.

List of abbreviations in addition to those ordinarily in use in the Annual.

ChronP	Furumark, *The Chronology of Mycenaean Pottery* (1941).
ChTs	Wace, *Chamber Tombs at Mycenae* (*Archaeologia* 82), 1932.
Gournia	Hawes, *Gournia* (1908).
HM	Herakleion Museum Inventory Number.
KCh	Κρητικὰ Χρονικά.
Mirabello	Van Effenterre, *Nécropoles du Mirabello* (1948).
MP	Furumark, *The Mycenaean Pottery* (1941).
Palaikastro	Bosanquet-Dawkins, *The Unpublished Objects from Palaikastro* (*BSA Supplementary Paper* I), 1923.
Prosymna	Blegen, *Prosymna* (1937).
PT	Evans, *The Prehistoric Tombs of Knossos* (*Archaeologia* 59), 1906.
RTs	Persson, *The Royal Tombs at Dendra* (1931).
TDA	Evans, *The Tomb of the Double Axes* (*Archaeologia* 65), 1914.

---

[1] *PM* ii, plan opp. 547: 'Late Minoan rock tombs' in bottom left corner.

(with the possible exception of tomb VIII which was found empty, and which from its shape and character may be Middle Minoan) all belonged to the Late Minoan III period, from the time of the destruction of the Late Minoan II Palace about 1400 B.C. (tombs I, II, XV), till the end of Late Minoan times (tomb VII), when iron had begun to come into use (*c.* ?1150 B.C.), a range of some 250 years or more. It is possible that tomb I, with its finely decorated clay vases and interesting bronze knives and razors, may go back within the limits of the early part of Late Minoan IIIA (Furumark's IIIA 1) before the destruction of the Palace.

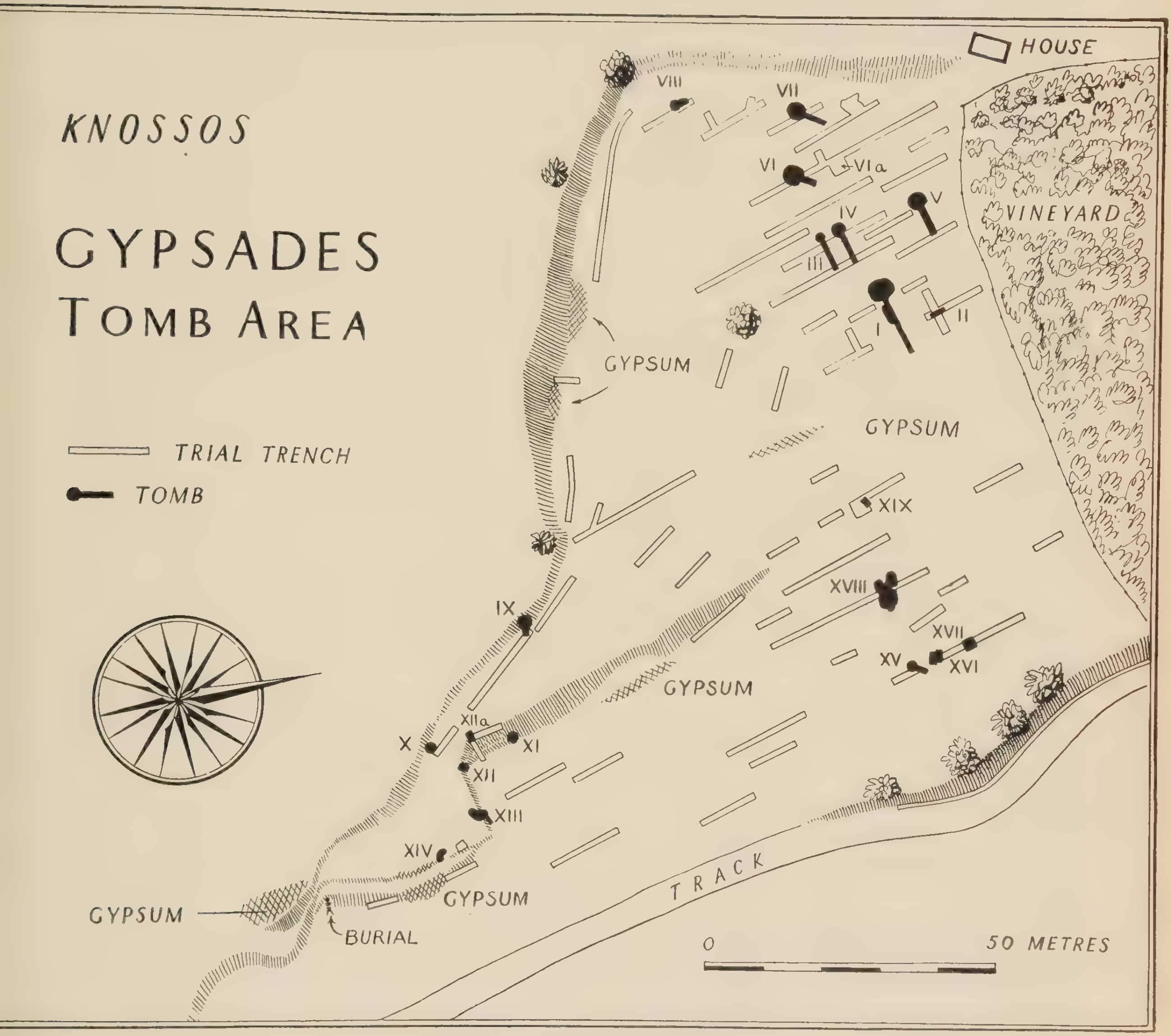

KNOSSOS
GYPSADES
TOMB AREA
TRIAL TRENCH
TOMB
HOUSE
VINEYARD
VIII
VII
VI
VIa
V
IV
III
II
I
GYPSUM
GYPSUM
XIX
XVIII
XVII
XVI
XV
IX
GYPSUM
XIIa
X
XI
XII
XIII
XIV
GYPSUM
GYPSUM
BURIAL
TRACK
0
50 METRES

FIG. 1. PLAN OF THE CEMETERY

The tombs fall into three groups, I–VIII, IX–XIV, and XV–XIX, with the Middle Minoan tomb XVIII. The best finds came from the tombs in the first group; but tomb XIII in the second group had evidently been a rich and important tomb, although it was found hopelessly plundered and ransacked. These three groups of tombs may simply reflect the geology of the area, with extensive patches of the hard crystalline gypsum rock, which gives the hill Gypsades its name, projecting through the soft chalk-like kouskouras in which the tombs have been excavated. This preference of the Bronze Age peoples for the soft kouskouras in which to dig their tombs and graves was shared by the Geometric inhabitants of the Knossos area, and the kouskouras was only, it seems, abandoned in favour of the harder limestone in archaic or classical times. The field in which the cemetery lies now slopes more or less evenly down towards the east; but it became clear during the course of the excavations that the surface of the ground at the time the tombs were dug had been very much more irregular, with steep banks and hillocks separated by deep gullies.

The tombs in this cemetery were not rich—there was only one object of gold, a small bead (X. 5)—but they are interesting for comparison with the more metropolitan cemetery of Zafer Papoura, excavated by Evans on the north edge of the Minoan city in 1904. The only other large cemetery of this period explored at Knossos, on the Mavro Spelio slopes beyond the Kairatos east of the Palace, was rather different in character, since many of the tombs there went back to Middle Minoan times and continued in use throughout Late Minoan I and II into Late Minoan III. The tombs in the Zafer Papoura Cemetery, to judge from the pottery found in them, range in time from the last period before the destruction of the Late Minoan II Palace (L.M. IIIA 1) to Late Minoan IIIB 1. There were no vases at Zafer Papoura as late as those (L.M. IIIB 2 and Sub-Minoan) from our tomb VII; but some L.M. IIIB 2 vases were found in tomb V of the Mavro Spelio Cemetery.[2]

The tombs of Gypsades, like those at Zafer Papoura and some of those of the same period in the Mavro Spelio cemetery, had contained one or two burials in position; but several of the tombs had evidently been re-used, and in these the bones of earlier burials might be pushed into a small hole in the floor (e.g. tomb IV);[3] although sometimes at any rate (e.g. tomb XI) small holes appear to have been dug to receive the tightly contracted corpses of young people or children. But even in these instances the total number of burials in any one tomb during its whole period of use was comparatively few. This tendency towards private and individual burial during the Late Minoan period at Knossos and elsewhere in Crete is in striking contrast with the decidedly communal or family character of the great contemporary chamber tombs at Mycenae and other sites on the Greek mainland, which in this respect are reminiscent of the burial customs of an earlier age, Early and Middle Minoan, in Crete. The more important graves of the mainland in the Late Bronze Age—the tholos tombs and some large and very rich chamber tombs—have indeed a private and individual character like tombs in Crete. On the other hand, the system of family vaults for the mass of the people, as found on the mainland in that period, does not become general in Crete again until the Early Iron Age with cremation burial.

The total number of Late Minoan burials in the cemetery was not large; about thirty-eight could be identified from eighteen certain or reasonably certain tombs (including all the tombs except VIa, XIIa, and the Middle Minoan XVIII). The largest number of burials of which there were traces in any one tomb was five in tomb X, where there was evidence for perhaps as many as three phases of use. One tomb (VI) contained four clay larnakes, and several of the tombs yielded traces of three burials, but others contained two, and some only one. In one or two other cases besides tomb X (e.g. tombs IX, XII) there may have been three phases of use, but in the majority of the tombs there was evidence for only one or two occasions of burial at the most. Where there was a pair of burials in a tomb, they may have been a man and his wife—for instance, the lower pair of skeletons in tomb X; but the bodies in tomb I were certainly both men. In cases where a pair of skeletons were found, the possibility cannot be quite excluded that there was only one occasion of burial, and that some form of suttee was practised, although there was no evidence to indicate this.[4]

---

[2] *BSA* xxviii. 258, figs. 12, 13.

[3] For bones from an earlier burial in a hole in the floor, cf. the chamber tomb at Pachiammos dug by Alexiou and assigned by him to L.M. IIIB. 1 (*KCh* 8 (1954) 399 f.), cf. *Gournia* 46.

There were a number of clay coffins (larnakes), two of them, from tombs VI and XIII, elaborately painted with spirals and papyrus and other flower motives (see p. 227). Traces of several wooden coffins (e.g. tombs II, XV) were also identified, together with two small wooden boxes (tombs IV and X), the former containing remains of an ivory comb.

Only nine of the eighteen Late Minoan tombs yielded clay vases, and there were no stone vases. Of the thirty-four Late Minoan vases recovered a third (eleven in all) came from tomb VII, and they appear to be the latest in time. The earliest no doubt are the fine group of four vases—rhyton, jug, stirrup vase, and cup—found together in the main chamber of tomb I. These belong to L.M. IIIA 2 or even to IIIA 1, and to the same horizon, or very little later, may be assigned the juglet from tomb II and the jug and cup from tomb XV. The vases from tombs VI, XI, and XIV are probably best regarded as L.M. IIIB 1; while those from tombs VIa and IX seem to be L.M. IIIB 2, not much if at all earlier than those from tomb VII.

Tomb VII with its rich and varied contents is an interesting and significant document for the end of the Bronze Age at Knossos. The character of the tomb, having only a few burials, all inhumations, and a typical clay larnax, is entirely Minoan. But with the many vases decorated in the latest Minoan (L.M. IIIB 2 and Sub-Minoan) styles were associated long bronze pins of queer shapes (VII. **13**–**16**) and an iron knife blade (VIII. **12**).

The bronzes from the tombs include a mirror (X. **3**), together with several interesting knives (I. **5**, **7**) and razors of both the leaf-shaped (I. **6**) and chopper (I. **8**, V. **1**, X. **4**) types (see p. 232). Only four sealstones (II. **4**, **5**; VII, **20**, **21**) were recovered from the Late Minoan tombs: to judge from the contexts in which they were found, it would appear that they were being used as amulets rather than as signets, and they were all certainly of an earlier date than the tombs in which they occurred; one of black haematite with a butterfly (II. **4**) was in a much worn condition, and another of agate with a flying fish (VII. **21**) was broken.

Seven examples of the familiar cone-shaped stone 'spindle-whorls' (for the type see XII. **1**, FIG. 35) were recovered from five different tombs. It is interesting that some of these at any rate, to judge from the contexts in which they occurred, really appear to have been placed in the tombs as *spindle-whorls*, and not as beads or buttons (see under IV. **2**, p. 246).

Other finds from the tombs include an ivory comb (IV. **1**), ear-rings (e.g. IX. **3**) and finger rings (III. **1**, IV. **4**, VII. **17**) of bronze and silver, a figure-of-eight shield amulet of faience (XII a. **2**), and heart- and bracket-shaped ornaments of glass paste (X. **6**, **10**); together with beads of glass (e.g. XI. **9**), faience, gold (X. **5**), crystal (IV. **5**, X. **11**), carnelian, and amber. The two amber beads (II. **6** and VII. **23**) are especially significant in view of the extreme rarity of finds of amber in Bronze Age Crete to date (see p. 237 and Appendix, p. 261).

A good many stray sherds were found in the trial trenches and in the fill of the dromoi and collapsed chambers of the tombs, and a majority of these appear to have been Middle Minoan. Sherds were naturally more abundant where the rock was at some depth below the modern surface, as in the area of tomb II and down the slope to the east, north of tombs XVII and XVIII. This Middle Minoan pottery, like that from the collapsed fill of the Middle Minoan tomb XVIII (p. 220), seemed to be occupation debris and not to come from tombs. Elsewhere on the high ground around Knossos abundant occupation rubbish of the Middle Minoan period has been observed, for instance on the summit of the hill north of Zafer Papoura where the classical tower stood. It has been suggested that this debris may represent the city rubbish-dumps, or reflect a seasonal occupation of the heights round the city during the summer.[5]

---

[4] This suggestion was put forward in regard to the Hospital site tombs (*BSA* xlvii. 248 n. 17; cf. Persson in *RTs* 68).

Several scraps of red-painted plaster were recovered, the largest pieces from deep in the fill of tomb XVIII (see p. 223) and smaller bits from the area of tomb XVII, the fill of tomb XIII, and above the shaft-grave II. Other relics of the Middle Minoan period, besides those from the fill of tomb XVIII, include one or two fragments of stone bowls, and worked lumps of steatite, presumably workmen's waste, like the lump of Lapis Lacedaemonius (M. **4**); also terracotta figurines (e.g. M. **5**, **6**), odd scraps of bronze, and obsidian including a core and some 25 small flakes and blades.

A certain amount of Late Minoan pottery was recovered from the trial trenches, and from the fill of the dromoi and collapsed chambers of the tombs, including parts of one or two fine decorated vases, which may have come from tombs somewhere in the area (see p. 226 and PLATES 57*f*, 58*a*).

Relics of later periods include a single sherd from a Late Geometric pithos found deep in a trial north of tomb VIa, three pyramidal loom-weights from the areas of Tombs I, XI, and XIII, and scraps of glass, probably Roman, from the region of tombs VII and VIII.

SINCLAIR HOOD

THE TOMBS

(PLATES 49–53)

Tomb I (Plan, FIG. 2; PLATE 49*b*). This was the original tomb whose collapse led to the discovery of the cemetery. It was also apparently the earliest in point of time, containing four clay vases (**1–4**) decorated in a fine style which may go back before the destruction of the Last Palace. The main chamber was more or less rectangular (L. 1·90, W. about 2·50), approached by a level dromos (L. 3·00, W. 0·85–90), on the left side of which was a walled recess (L. 1·78, W. 0·75) exactly like the chamber in graves of the pit-cave type as found in the Zafer Papoura cemetery (*PT* 15 f., and fig. 11*a*, *b*). The dromos was entered by an unusually steep ramp descending at an angle of nearly 45 degrees.

The tomb was quite intact and unplundered. But the roof of the main chamber had partly collapsed, together with the top of the entrance, so that the upper part of the blocking wall had fallen into the chamber. The solitary burial had been contained in a wooden coffin, set against the south wall of the chamber, of which traces survived together with some indications of the blue paint with which it had been decorated (PLATE 49*b*).[1] The dusky patch indicating the decayed wood of the coffin lay above the floor of the tomb to a depth of between 5 and 10 centimetres over an area of about L. 1·50 m. and W. 0·50 m.[2] The coffin traces began immediately on the floor over most of the area where they occurred, but in some places they were a little above it. The coffin may therefore have had legs like the clay counterparts of which many examples were found in the cemetery (see FIG. 24). At one or two points round the edges of the coffin patch it was possible to trace the stumps of the sides rising vertically upwards. The body must have been put into the coffin with its knees drawn up in the usual manner (e.g. *PT* 10, fig.

---

[5] Knossos Survey, p. 6; *BSA* 52 (1957) 228.

[1] For blue-painted coffins, see *BSA* 51 (1956) 86.

[2] The very well-preserved wooden coffin found by Alexiou at Katsamba was about 1·30 long and 0·45 wide (*KCh* 6 (1952) 11 f.). For an account of such wooden coffins in Crete see *BSA* 51 (1956) 86.

5); but hardly any traces of the skeleton survived except for the teeth which proved that the head had been at the east end near the door. Some specks of soapy black charcoal, different in character from the traces of the coffin, were observed right on the floor of the tomb underneath them and may have come from a torch or ritual brazier used at the time of burial.

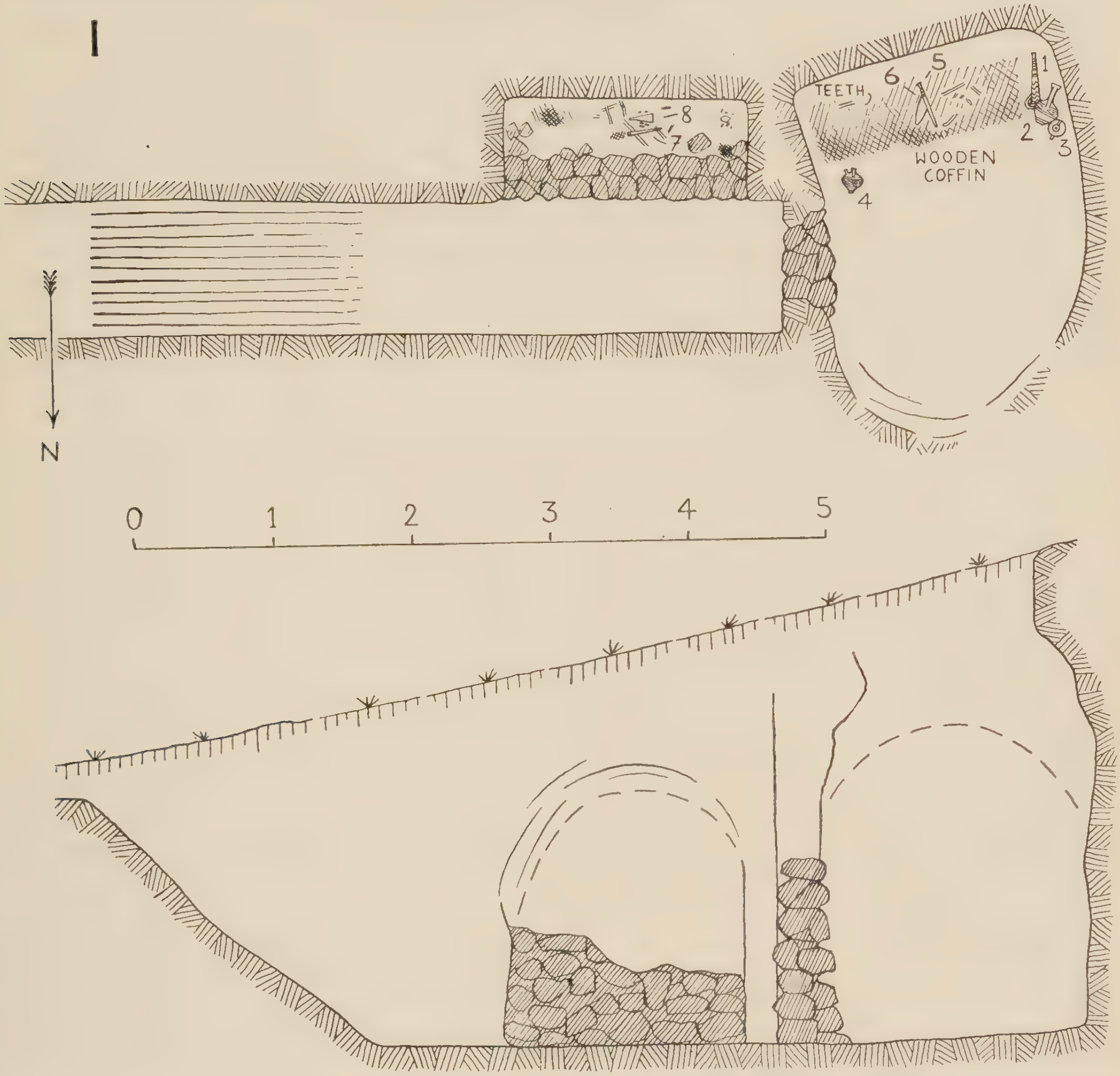


Fig. 2. Tomb I

On the floor beside the coffin had been placed four superb vases decorated in a style which may be assigned to the borders of Late Minoan IIIA 1 and 2, either just before or after the destruction of the Last Palace at Knossos *c.* 1400 B.C. --a rhyton (**1**), jug (**2**), and cup (**3**) at the foot, and a stirrup vase (**4**) by the head; the jug no doubt containing water or wine, the cup for drinking and the rhyton for libations; the stirrup vase perhaps held oil.

In the centre of the coffin patch between 0·05 and 0·10 above the floor lay an interesting bronze knife (**5**) with a flanged tang continuing the crescent-shaped profile of the pommel, and a leaf-shaped razor (**6**) below it. Beneath the razor were observed remains of finger bones, and it and the knife may have been placed above the waist of the dead man in the position in which daggers are worn by the statuettes of Middle Minoan votaries from Petsofa (Palaikastro).[3] But they may have been set on top of the coffin, as they were found slightly above the floor and no coffin traces were observed over them.

The side niche in the dromos had a blocking wall preserved to a height of about 0·80, but the top of the wall had toppled into the niche when part of its vault had collapsed. Three of the stones in the bottom course of the blocking wall were squared, one of them a gypsum block, the others of limestone like most of the rough stones used in the blocking walls in the tombs here. In the niche were scanty traces of a single skeleton with some dusky patches that might indicate a wooden coffin like that in the main chamber. Above the body had been resting a bronze knife (**7**) and a chopper-type razor (**8**). There were no clay vases here, and neither this body in the niche nor that in the main chamber had been accompanied by trinkets, sealstones, or beads. This together with the knives and razors suggests that both the burials were men. The bones from the main chamber were identifiable as those of an adult man aged between twenty and thirty-five.[4]

Tomb II (Plan, FIG. 3; PLATE 49*c–e*). This was a shaft-grave (L. 1·70; W. 0·60/70) with the floor over 2 metres below the modern surface. A trial trench happened to come down along the length of the shaft, whose sides were not clearly distinguished except at the bottom, where the grave was cut into the kouskouras which here shelved at a steep angle down to the east. Above the grave was a covering of large slabs of limestone, which from their position seemed to have been put above a filling of earth shovelled into the grave; or else they had been very much disturbed later (PLATE 49*c*). But the grave itself certainly appeared to be intact. It contained the traces of a single skeleton with the knees flexed and the head at the south end. The burial, to judge from the objects found with it, was that of a woman.

A small fragment of ivory or bone (**11**) from the area of the chest may be remains of a pin. At the feet of the skeleton a vague patch of dark staining might suggest the presence of a small wooden box or casket like those in tombs IV and X. With it were associated three beads (**2**, **3**), and near by lay a small jug finely decorated in a style that must be assigned to Late Minoan IIIA 2 (PLATE 49*d*). At the other end of the grave in front of the face of the skull were further traces of wood which might indicate a box, together with a group of five beads (**6–10**), including one of amber (**6**), and two sealstones (**4**, **5**) (PLATE 49*e*).

The traces of the skeleton were observed resting about 0·10 above the rock floor of the grave, and this might be taken as evidence that the body had been placed in a wooden coffin with legs, into the space below which the earth had found its way before the wood decayed; but this is hardly possible, at least if the coffin had a gabled lid, unless the covering slabs had sunk a great deal, and it may be that earth had fallen into the grave, perhaps washed there by rain, while it was open before the burial was made.

Tomb III (Plan, FIG. 4; PLATE 49*f–g*) was a chamber tomb, with a curiously minute chamber, really just a rude niche about half a metre in depth, and the same width as its entrance. This, about 1·15 high and 0·65 wide, was closed by a blocking wall, built with lumps of gypsum and limestone, and unusually rough in construction. Inside the niche were the remains of a single

---

[3] *BSA* ix, pl. x. 1, 7. Cf. Zervos, *L'Art de la Crète*, figs. 232–3.

[4] We are much indebted to Dr. J. C. Trevor for the identification of these and of the other skeletal remains from the tombs. Bones from tombs dug after Dr. Trevor had left Crete, notably those from the Middle Minoan tomb XVIII, have not yet been examined.

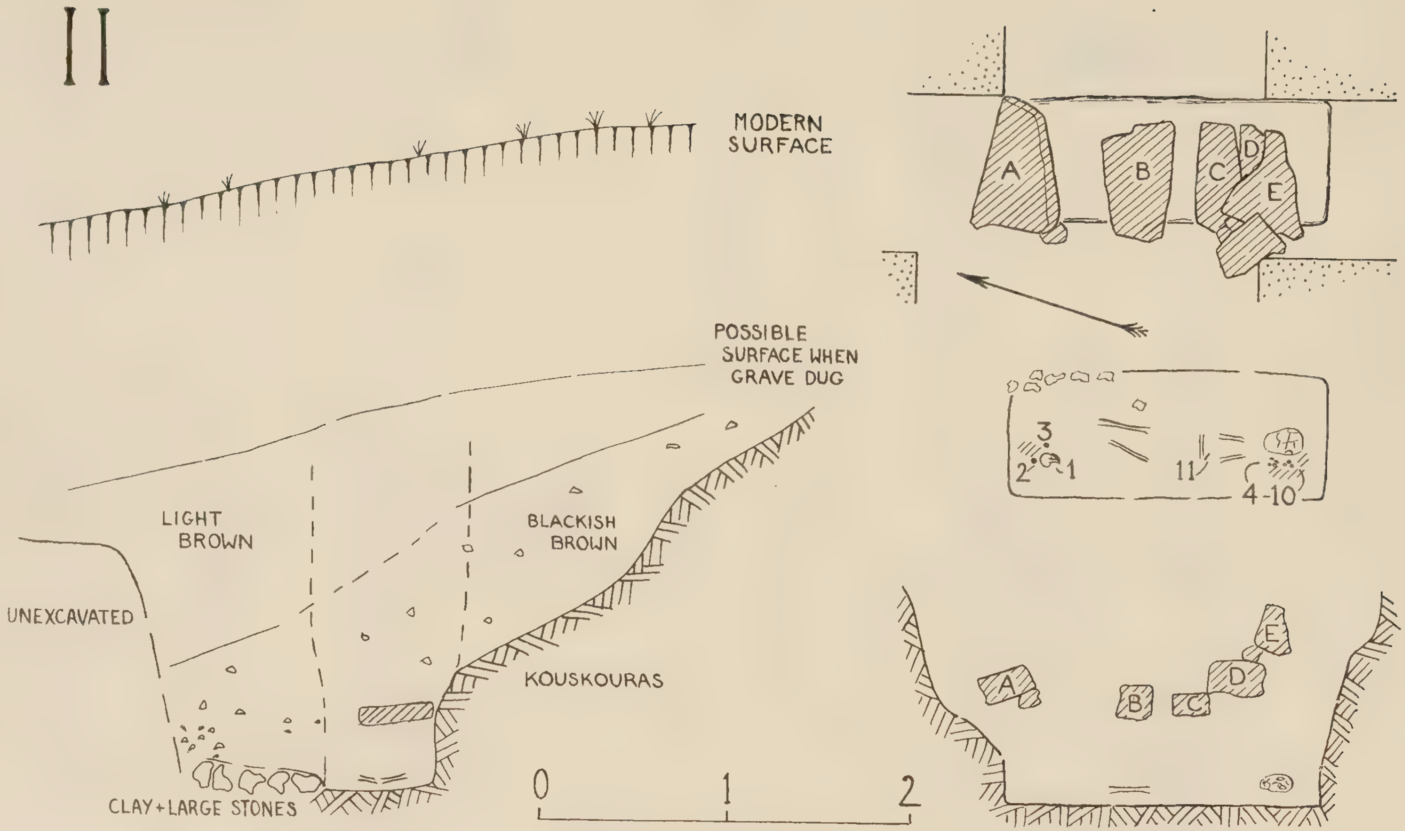

II
MODERN SURFACE
POSSIBLE SURFACE WHEN GRAVE DUG
LIGHT BROWN
BLACKISH BROWN
UNEXCAVATED
KOUSKOURAS
CLAY + LARGE STONES
0
1
2
A
B
C
D
E
3
2
1
11
4-10

Fig. 3. Tomb II

skeleton, apparently, to judge from the teeth, of a child between eight and nine years old, which had been placed crouching in an upright position with the head against the east wall. With the burial was a simple bronze finger ring (1); and some greyish powder also found near finger bones might be the remains of a decayed ring, or of some other trinket, of silver.

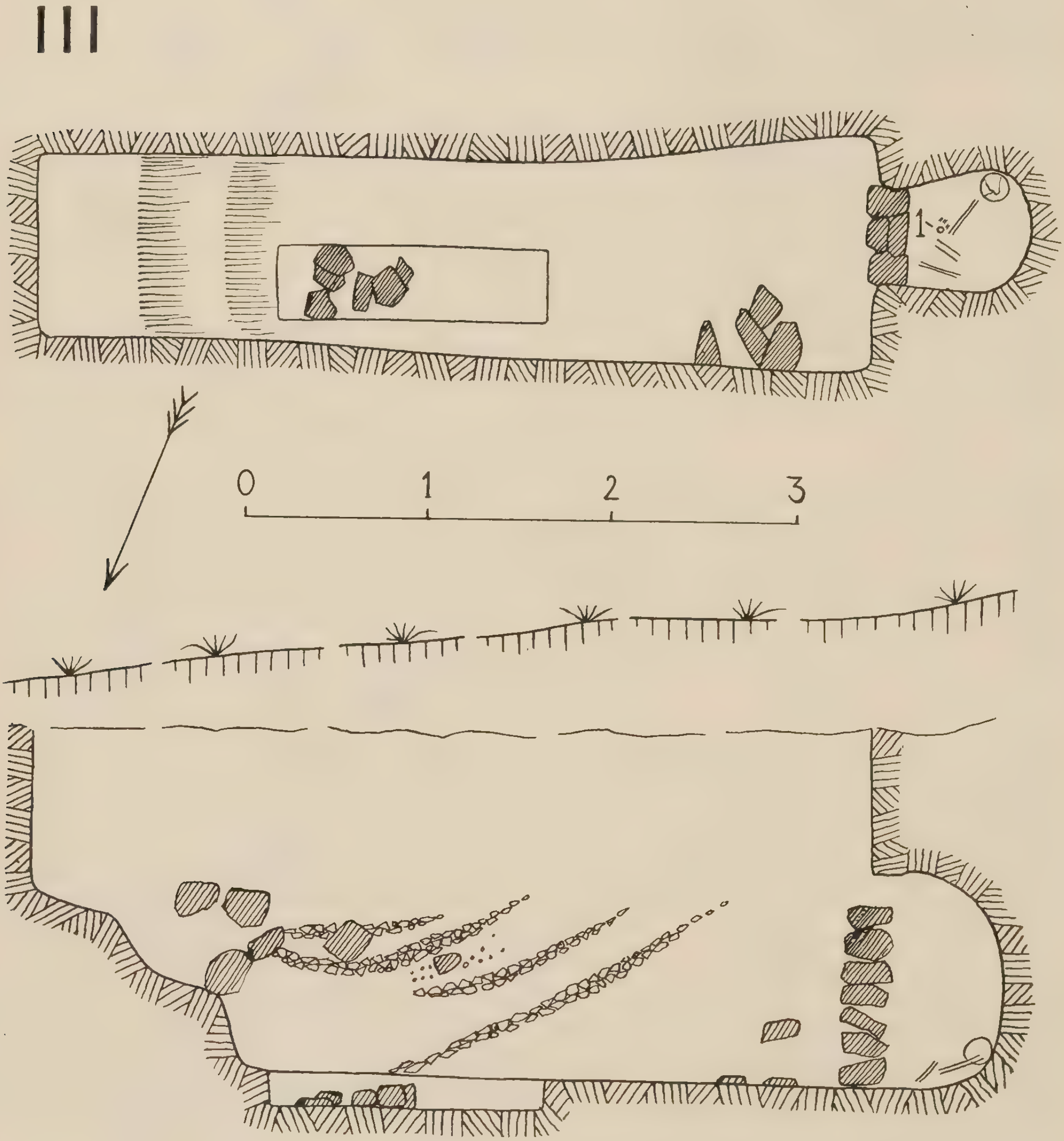


Fig. 4. Tomb III

The tiny size of the chamber and the youth of the person buried in it may reflect a premature death before the tomb was ready. For the dromos, by contrast with the chamber, was decidedly large, nearly 1·40 wide at the west or chamber end, narrowing to a metre in the east; it was over

3 metres long with a level floor, and was entered from the east down a steep flight of roughly cut steps. In the north-east corner of the dromos was a shallow rectangular pit (L. 1·50, W. 0·42), like a grave but only 0·20 deep, with nothing in it except a few stones: it may have been a shaft-grave, which for some reason was never completed (PLATE 49*f*).

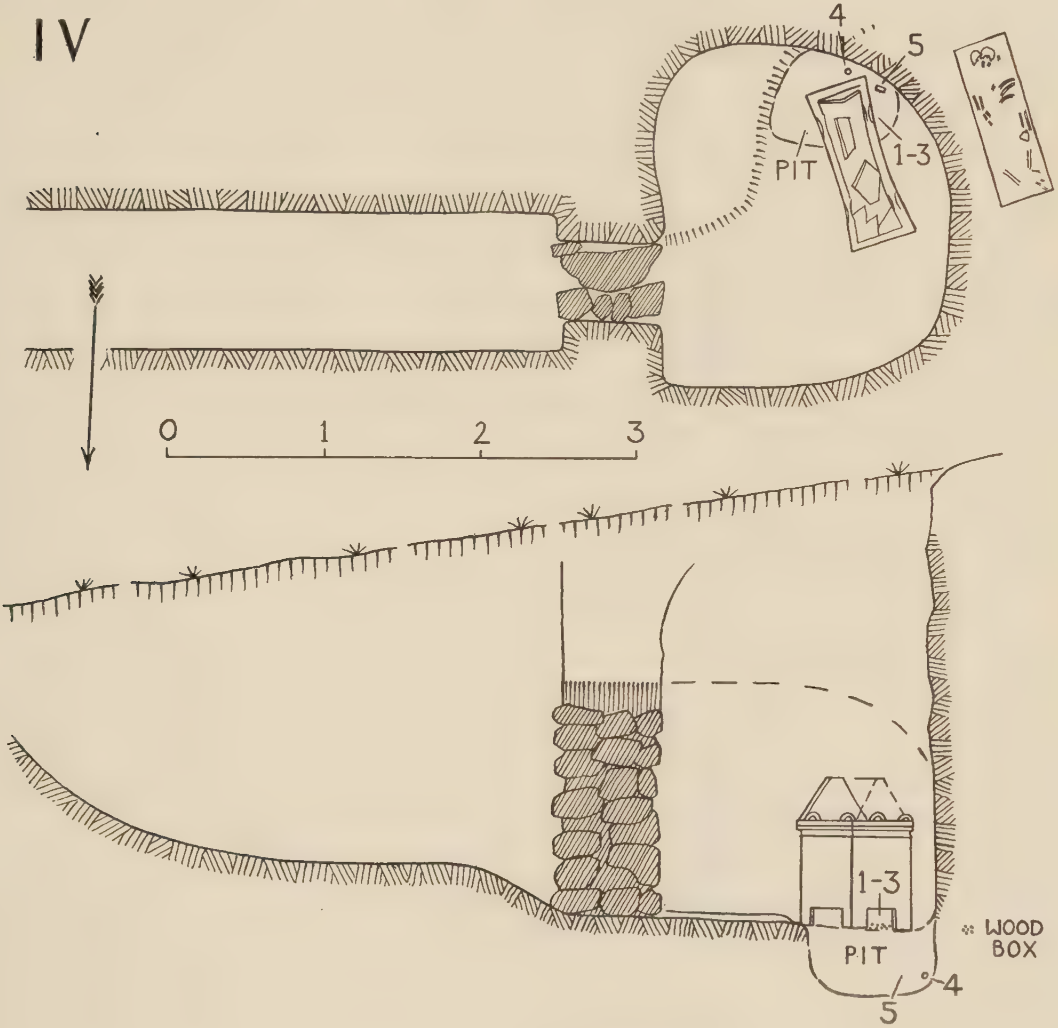


Fig. 5. Tomb IV

Tomb IV (Plan, FIG. 5; PLATE 50*a–c*) was a chamber tomb, with a sloping dromos (L. about 3·50, W. 0·90). The chamber, sub-rectangular in shape (L. 1·80, W. 2·20), had collapsed; but the entrance with a square-cut lintel (L. 0·70, W. 0·65, Ht. 1·45) was well preserved, and the blocking wall, built of rough lumps mostly of gypsum, was still in place except for a gap of 0·20 at the top from which the stones had fallen into the tomb chamber. In the south-east corner of the chamber a kind of low irregular ledge had been left about 0·05 higher than the rest of the chamber floor. No doubt the final levelling of the chamber floor had never been completed. Against the back wall stood a single larnax (FIG. 24; PLATE 50*b*), whose gabled lid had been severely damaged by the collapse of the chamber roof, containing the scanty remains of a skeleton with its head at the south end.

With this burial nothing was found; but in the corner of the tomb below the south end of the larnax a small roughly rectangular pit (L. 0·80, W. 0·60, and about 0·40 deep) contained a confused mass of bones, apparently the remains of former burials in the tomb—one probably an adult female and the other an adolescent male aged about fifteen to twenty—together with a large cylindrical crystal bead (**5**) and a bronze finger ring (**4**) (PLATE 50*c*).

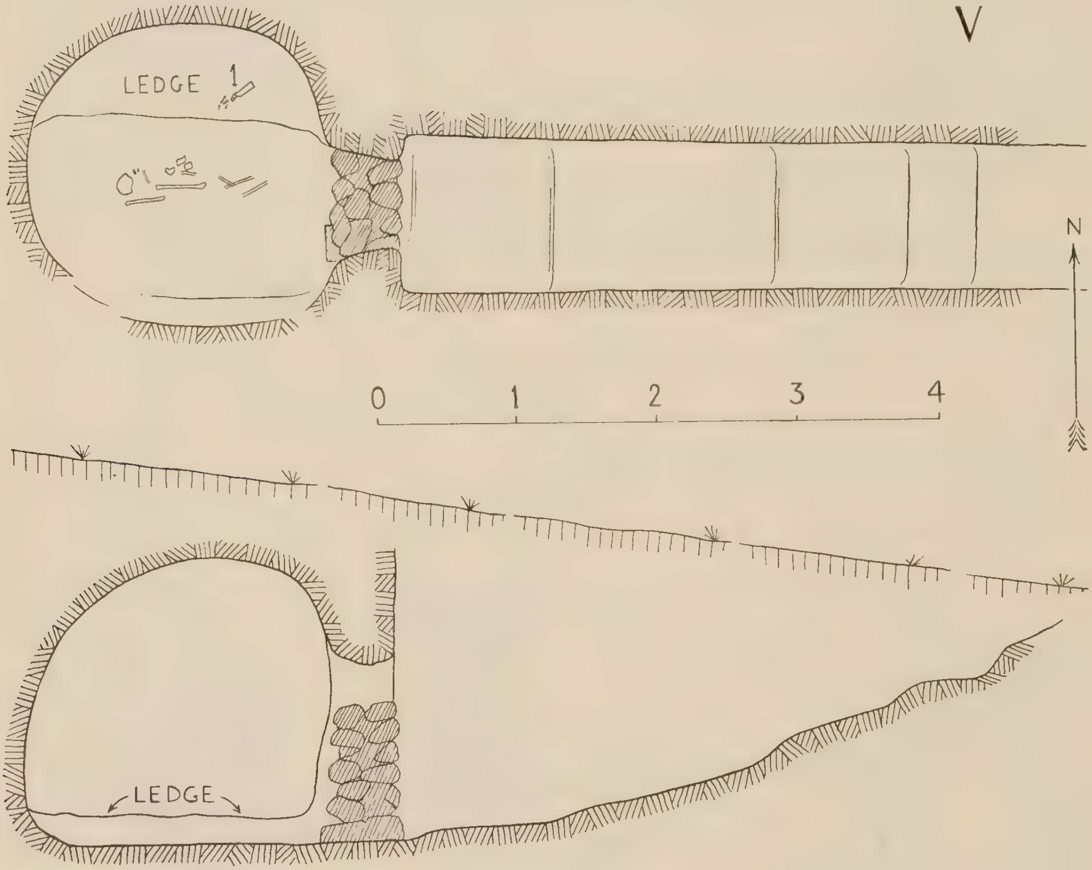


FIG. 6. TOMB V

Below the larnax, but overlapping the top of the north-west corner of the pit, was a dusky patch more or less rectangular in shape (0·22/6×0·16/20), which evidently represented the traces of a small wooden box; with it were the remains of an ivory comb (**1**), a conical steatite spindle-whorl (**2**), and a small bronze point (**3**)—things suitable to a woman. The box traces lay a few centimetres above the level of the top of the pit on which the larnax rested, and the box had clearly been pushed under the larnax, whose feet (0·15 high) left ample space for it.

Tomb V (Plan, FIG. 6; PLATE 50*d–e*) had a chamber, roughly circular in shape (diam. *c.* 2·10), which had not collapsed although it had filled with earth to a depth of 2 metres above the floor. It was approached by a dromos (L. 5·0, W. just over 1 metre), sloping downwards with rather indistinct steps in it. The entrance (W. 0·57) had its blocking wall preserved to the full height of 1·30 m. (PLATE 50*e*). At the bottom of the wall was a large squared block of limestone, and two other squared blocks were built into it above.

In the centre of the chamber were slight remains of a skeleton, almost certainly of an adult male, with its head away from the entrance. The bones were all found about 0·10 above the floor, which might suggest that the body had originally been placed in a wooden coffin on legs, but no signs of such a coffin were observed.

Along the north side of the tomb was a ledge about 0·15 high, on which lay a bronze chopper-type razor (**1**) together with slight traces of bone, evidently from another burial. The presence of the razor would suggest that this was another adult male.

No other object apart from the razor (**1**) was recovered from the tomb, although there was no sign of plundering and the blocking wall was apparently in place in the entrance.

Tomb VI (Plan, FIG. 7; PLATE 50*f*) had a collapsed chamber, large and sub-rectangular in shape (L. 2·40, W. about 3·0), with the floor only 1·30 below the modern surface owing to erosion of the ground in this area. The dromos, of which a length of just over 2 metres was preserved, was 1·10 wide by the entrance; this had been much destroyed, but remains of the blocking wall survived. Inside the chamber stood four clay larnakes (FIG. 24*a*), arranged in pairs, each with fragmentary traces of a burial. One of these, larnax IV (PLATE 61*d–f*), was decorated with spirals and papyrus in a style which may be assigned to L.M. IIIA 2. Apart from this the grave furniture was exceptionally poor in character. It seems that in Crete the Late Bronze Age tombs with clay larnakes are apt to be the poorest, while the richest tombs tend not to have them. The great may have been buried in wooden chests, elaborately decorated like the stone sarcophagus from Hagia Triada, for which the clay larnakes that obviously imitate wooden originals were perhaps cheaper substitutes (see *BSA* 51 (1956) 86).

Two plain vases were found on the floor of the chamber: a spouted bowl (**1**) just to the right of the entrance, and a small jar (**2**) under larnax III. Traces of blue paint in larnax I may have come from some wooden object placed with the burial here. Nothing was found in larnax II; but larnax III produced two small beads of bronze (**3**) and stone (**4**). Larnax IV yielded the half of a bronze knife (**5**), and a fragment of a bronze blade (**6**), perhaps from a leaf-shaped razor. The only other find was a conical spindle-whorl (**7**) beneath the blocking wall of the entrance.

Tomb VIa. About 3 metres north of tomb VI, resting on the rock at a depth of just under a metre below the surface, was a small group of shattered vases, including one complete stirrup vase (**1**) with parts of another (**2**), a small two-handled jar (**3**), and an amphora (**4**). These may come from a much-destroyed grave or tomb, although no bones were noted. Stones in the area of the vases might be from a blocking wall or a grave enclosure. The vases, assigned to L.M. IIIB 2, are amongst the latest found in the cemetery, and compare with those from the neighbouring tomb VII.

In ancient times there seems to have been a rise in the ground in the region of tombs VI and VIa, since the rock falls away to the north, and 5 or 6 metres beyond here a sherd of Geometric pottery was recovered from the earth fill at a depth of 2½ metres below the modern surface.

Tomb VII (Plan, FIG. 8; PLATE 51*a–c*). This was the latest tomb in the cemetery, and had a much larger number of vases and other grave goods than any of the other tombs. The chamber (L. 1·70, W. 1·90) had collapsed; but a larnax (PLATES 51*b*, 61*a*) with its gabled lid still in place was standing complete, though broken, against the north wall. The entrance, only 0·45 across at the front (dromos) end, widened towards the chamber. The top of the entrance had disappeared, but a blocking wall about 0·50 thick was preserved in it to the height of a metre (PLATE 51*a*, *c*). A large slab of dressed limestone (A) (measuring 0·70 × 0·50), with a square dowel hole (0·04 × 0·04 × 0·07 deep) at one corner, was found high in the fill of the chamber, and may have come from the top of the blocking wall, or might even have formed a kind of lintel over the front of the entrance, supported by wooden posts based upon the large stones which flanked it on the outside—a rudimentary version in fact of the columned façades of the great tholos tombs of Atreus and Clytemnestra at Mycenae: but the stone on the north side of the entrance at least had an irregular top surface, which did not appear to make it very suitable as a base for a post

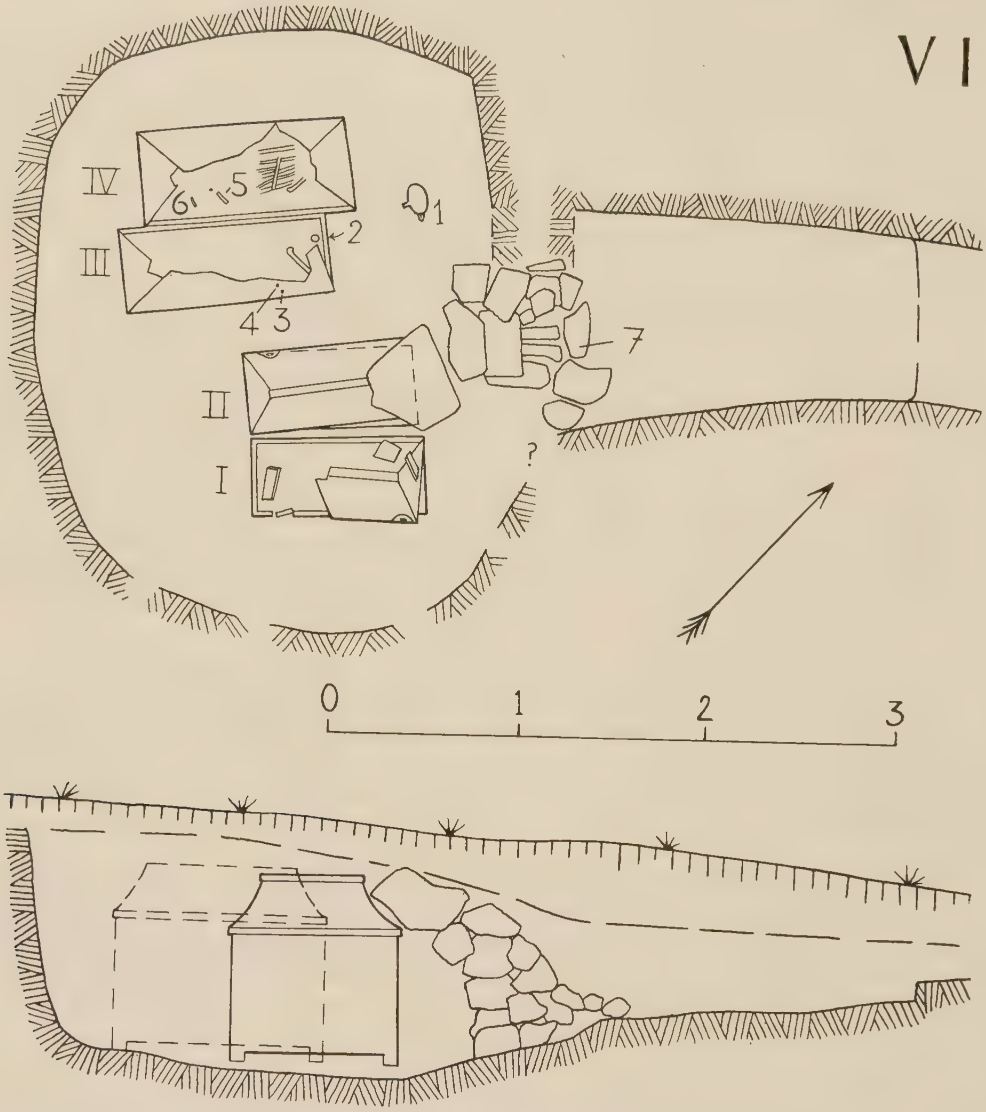


FIG. 7. TOMB VI

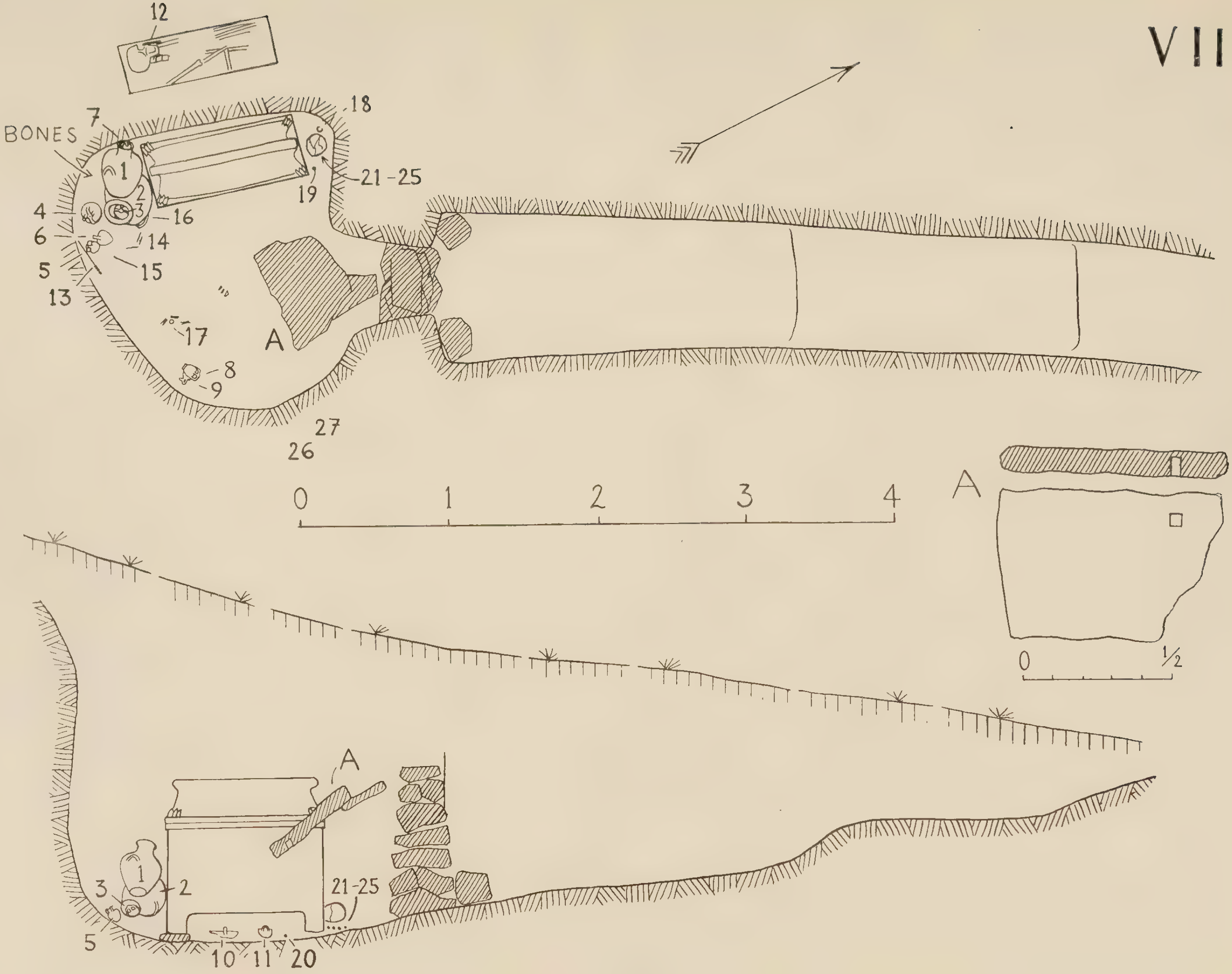

VII
12
BONES
7
1
2
3
4
6
5
13
14
15
16
17
8
9
18
19
21-25
A
27
26
0
1
2
3
4
A
0
1/2
A
1
2
3
5
10
11
20
21-25

Fig. 8. Tomb VII

or column (see PLATE 51*c*). The dromos sloped down with a rough step in it, widening in a curve by the entrance to the chamber from 0·85 to nearly a metre across.

The larnax, which was decorated with straight and wavy stripes in red paint, may be earlier than the tomb itself and the objects found in it. It contained the remains of a skeleton, but no grave goods except for an interesting iron knife with bronze rivets (**12**), which had apparently been placed in front of the face of the corpse.

In the far south-west corner of the tomb, beyond the end of the larnax, was a pile of vases, consisting of two large amphorae (**1**, **2**), each with a stirrup jar in its mouth (**7**, **3**), with three other stirrup vases (**4**, **5**, **6**) against the south wall of the tomb beside them; also four long bronze pins (**13**–**16**)—**15** about 0·30, **13** 0·15/20 above the floor of the tomb, and **16** about 0·10 above the floor underneath the hydria **2**: **14** was also found in several scattered pieces a bit above the floor.

These vases and pins seem to have been placed in the tomb after the larnax was there, and they are probably therefore the grave goods which accompanied the burial in the larnax. But traces of bones noted behind the vases in the farthest south-west corner may belong to some earlier burial. With this, or with another earlier burial, must belong the skull found in the north-west corner of the tomb outside the larnax at the other end.

From beneath the skull were recovered three beads (**23**–**25**), one being of amber (**23**), together with a conical spindle-whorl (**22**) and a damaged agate sealstone (**21**) with a fine representation of a flying fish, work certainly of a much earlier period than the burials in this tomb. Similar groups of odd beads were found with the skeletons, apparently of women, in tombs II and X. The group from tomb II also included an amber bead and sealstones. The beads and sealstones in these irregular groups had probably been kept and worn for their amuletic powers rather than for their decorative virtues.

With this same earlier burial, or perhaps with that in the larnax, may have belonged the two plain vases (**10**, **11**) and a tiny sealstone (**20**) with a design of a talismanic character resting above the floor of the tomb underneath the larnax.

There seems to have been yet another burial, of which only scanty traces were recognized, including some finger bones associated with a simple bronze ring (**17**), in the eastern part of the chamber. With this burial evidently went the group of two vases, a stirrup jar (**8**), and a small jug (**9**), found here.

From the surface of the rock just beyond the edge of the tomb on the east were recovered parts of two stirrup jars (**26**, **27**) of the same period (L.M. IIIB **2**) as the vases from the tomb. These may represent the remains of a disturbed grave at a higher level, as it was thought might be the case with the group of vases (VIa) north of tomb VI; or they might be offerings placed outside the tomb.

Tomb VIII (Plan, FIG. 9; PLATE 52*d*). This curious little tomb had a chamber, more or less circular (diam. *c.* 1·30), dug into a large pocket of the hard red clay which is found sometimes in the kouskouras rock. There was a drop of 0·60 from the entrance, which was closed by a single large slab (W. 0·86, Ht. 0·50, Th. 0·13) wedged with small stones at the sides. The chamber had collapsed, and the top of the entrance had disappeared, but it was presumably no larger than the slab which closed it. The dromos, of which only a length of 1·50 was preserved, widened from a metre to 1·30 across by the entrance to the chamber.

The blocking slab was clearly in place, and there was no sign that the tomb had been plundered, but it contained nothing except the scanty remains of a single burial, a badly preserved skull resting about 0·10 above the floor, with a few scraps of bone.

The tomb, however, is unusually interesting, since it stands typologically, as it may in point of time, between the great communal chamber tombs of the Middle Minoan period, of which tomb XVIII in this cemetery is an example, and the smaller comparatively private or individual tombs of the Late Minoan age. The short wide dromos, in plan like the hilt of a sword widening towards the entrance, is a feature of the earliest Late Minoan tombs, while the small entrance blocked by a single slab with a sharp drop down to the floor of the tomb continues a Middle Minoan tradition.

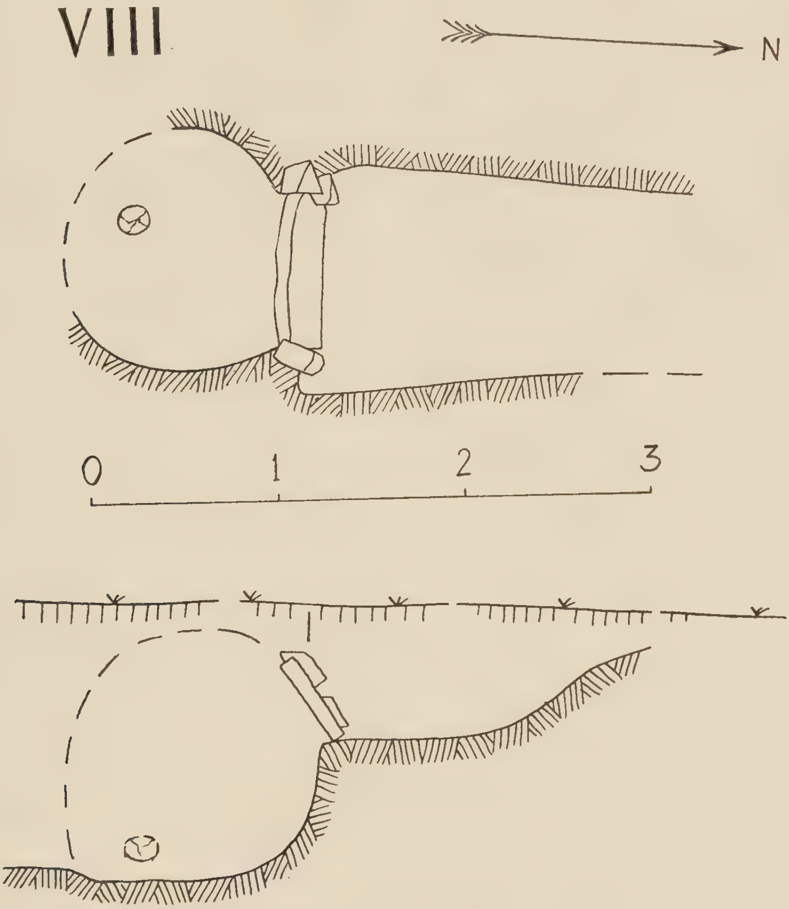


Fig. 9. Tomb VIII

Tomb IX (Plan, FIG. 10). The chamber, more or less circular (L. 2·0, W. 1·95), was dug into the high bank on the west edge of the field, and contained a single larnax (FIG. 24) with some bones and three skulls in it. The dromos and entrance had been much destroyed, but a few stones were left from the blocking wall.

A miniature stirrup vase (**1**), which may be assigned to Late Minoan IIIB 2, was found just above the larnax and had evidently been resting on the edge of its lid. Inside the larnax was a little plain deep bowl (**2**), which may also have been placed originally on top of the larnax, and have fallen into it when the lid collapsed. Fragments of two different lids were found in the larnax, and it may be that a broken lid was replaced at some point when the larnax was re-used. The only other find was a single crescent-shaped bronze ear-ring (**3**) beneath the skull in the south-west corner of the larnax.

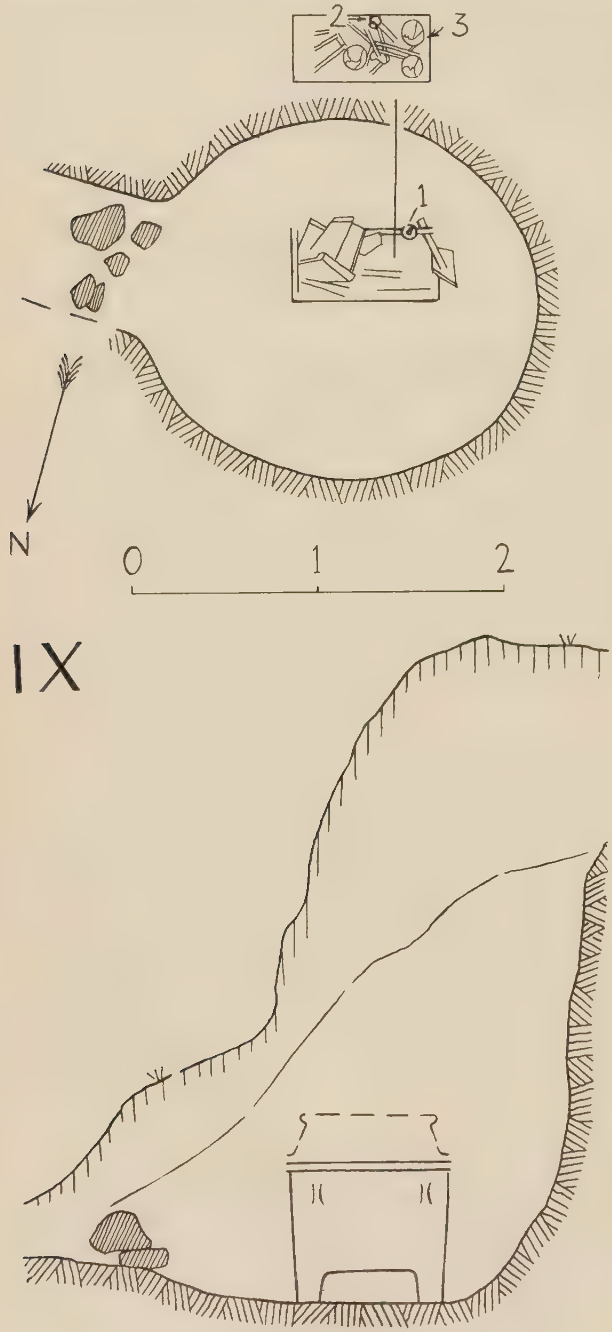


Fig. 10. Tomb IX

Tomb X (Plan, fig. 11; plate 52*c*) had a chamber dug into the same bank as tomb IX. The east side of the tomb had been largely destroyed, together with entrance and dromos, although part of the earliest blocking wall built of rough undressed stones remained. The chamber was sub-rectangular in shape (L. 1·95, W. 1·85), and interesting because it had two entirely distinct floor-levels separated by half a metre of fill. This fill between the upper and lower floors may be due to a partial collapse of the roof of the chamber, or it might have been deliberately introduced before the tomb was re-used.[5]

On the upper floor stood two larnakes (fig. 24), both very much damaged and plundered, according to information from our workmen, in quite recent times. Nothing was found in them except a single tooth in larnax I and a skull in larnax II. But in a small pit in the north-west corner of the tomb below this upper floor were remains of a skeleton, evidently of a very young person, but whether a burial in position or bones removed from one of the larnakes to make it ready for further use is not certain. With this burial was a little pilgrim flask (**1**) which is assigned to Late Minoan IIIA 2.

Above the original floor of the tomb lay the remains of two skeletons with their heads to the west. Burial I at least seems to have been extended, but II was apparently contracted. To judge from the objects with them, I may have been a man while II was a woman. Both skeletons were lying about 0·15–0·20 above the level of the rock floor, and it is therefore possible that the bodies may have been placed in wooden coffins on legs, although no indications of such were noted. Immediately above the floor below burial

---

[5] Cf. Schaeffer, *Enkomi-Alasia* 319.

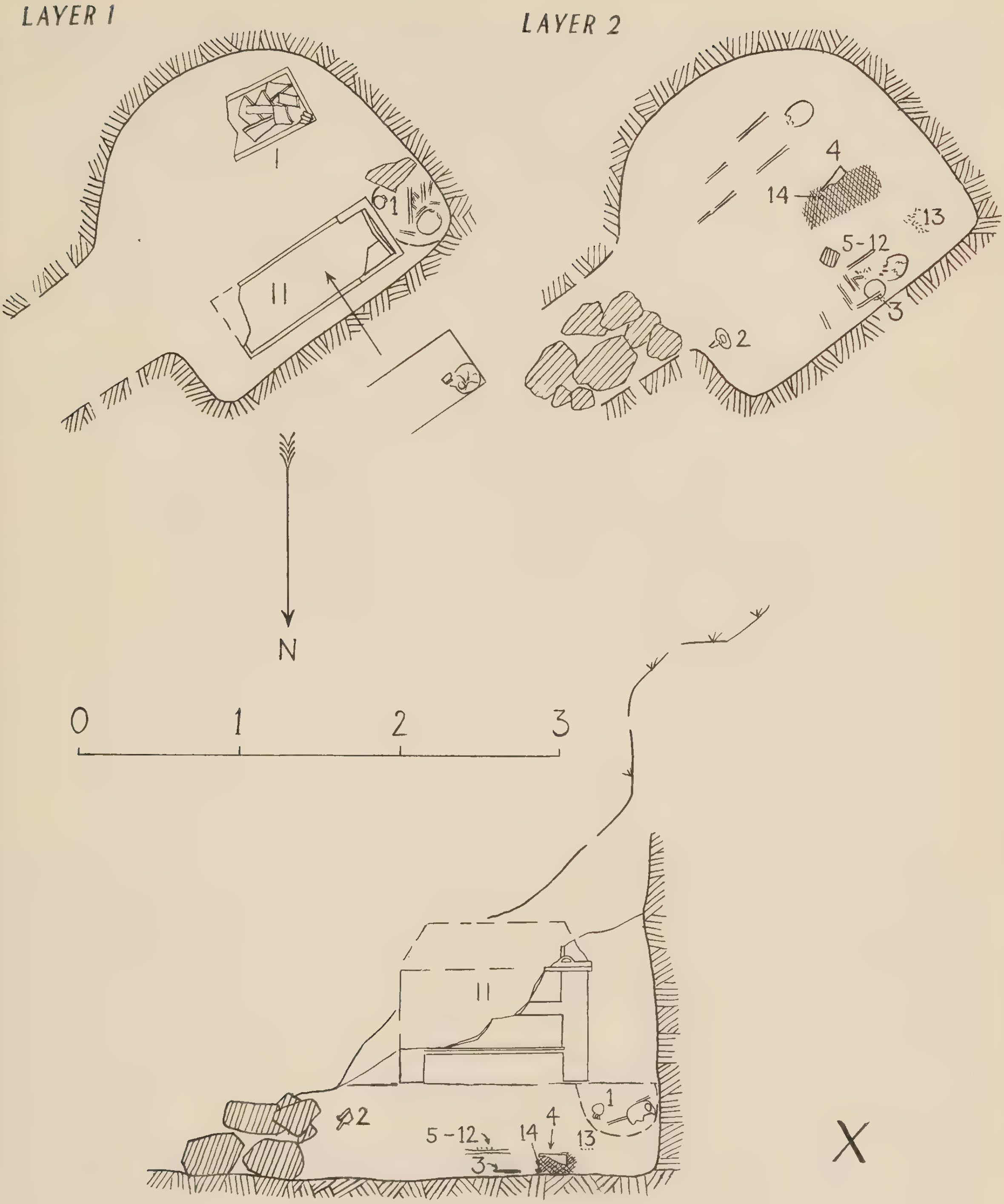

LAYER 1
LAYER 2
I
1
II
4
14
13
5-12
3
2
N
0
1
2
3
II
1
2
5-12
14
4
13
3
X

Fig. 11. Tomb X

II was a bronze mirror (**3**) with traces of a wooden handle which had apparently been resting against the wall of the tomb. On the right side of the chest of this skeleton was a group of seven or eight beads (**5–12**) (FIG. 12*a*) all different in shape and material, including one of gold (**5**), and heart- and bracket-shaped ornaments (**6**, **10**) of glass paste or faience, with a large crystal bead (**11**) beside them. These were perhaps amuletic rather than decorative in their use and intention. But about 0·10 to the west behind the skull of burial II lay another group of beads (**13**), rosettes and long beads of glass paste or faience, evidently remains of a formal necklace or collar (FIG. 12*b*).

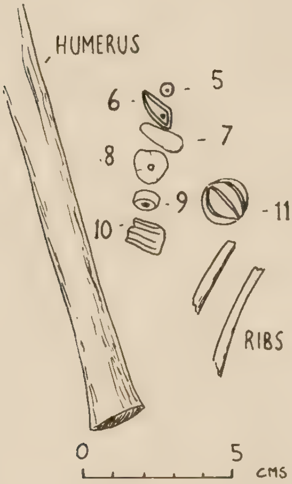


FIG. 12*a*. TOMB X: BEADS BY SKELETON II

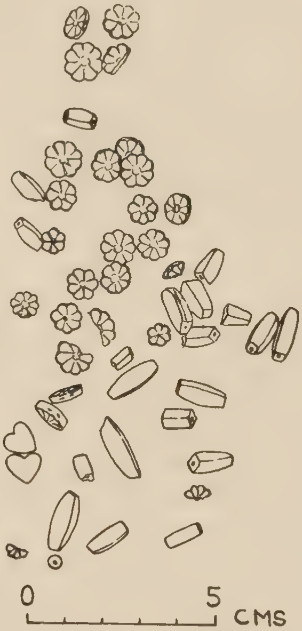


FIG. 12*b*. TOMB X: BEADS X. **13**

In the space between the two skeletons was a clearly defined blackish patch, one end of which seemed to be somewhat rounded, in area 0·44 long and 0·22 wide and in depth continuing from the floor of the tomb to about 0·20 above it (PLATE 52*c*). This no doubt represents the traces of a wooden box or casket set between the burials. With it, resting on the floor of the tomb, was a single ribbed bead (**14**); while a razor of the chopper type (**4**), lying edge downwards in the fill beside it, may have been originally leaning against the side of the box.

It is curious, if the burials had been contained in wooden coffins, that no trace of them was noticed, whereas the box had left such clear remains. But the box may have been made of some more durable wood, imported perhaps, like ebony, or of wood treated in a special way that had caused traces of it to survive.

A clay lamp (**2**), found lying on its side with the handle pointing downwards about 0·30 above the original floor of the tomb by the entrance, seemed to belong with these two earliest burials. It might have been placed originally on top of one of the wooden coffins, if such existed, like the stirrup vase on the edge of the larnax in tomb IX.

Tomb XI (Plan, FIG. 13; PLATE 51*d–f*) was a small chamber tomb in a high bank dividing the field from north to south. The chamber was horseshoe-shaped (L. 1·40, W. 1·80);[6] but the entrance and dromos had been virtually destroyed, although a few stones from the blocking wall survived. There were two clay larnakes (FIG. 24, PLATE 51*d*), each with traces of a burial in it—an adult, probably female, in I, and remains too fragmentary for determination in II. Larnax I

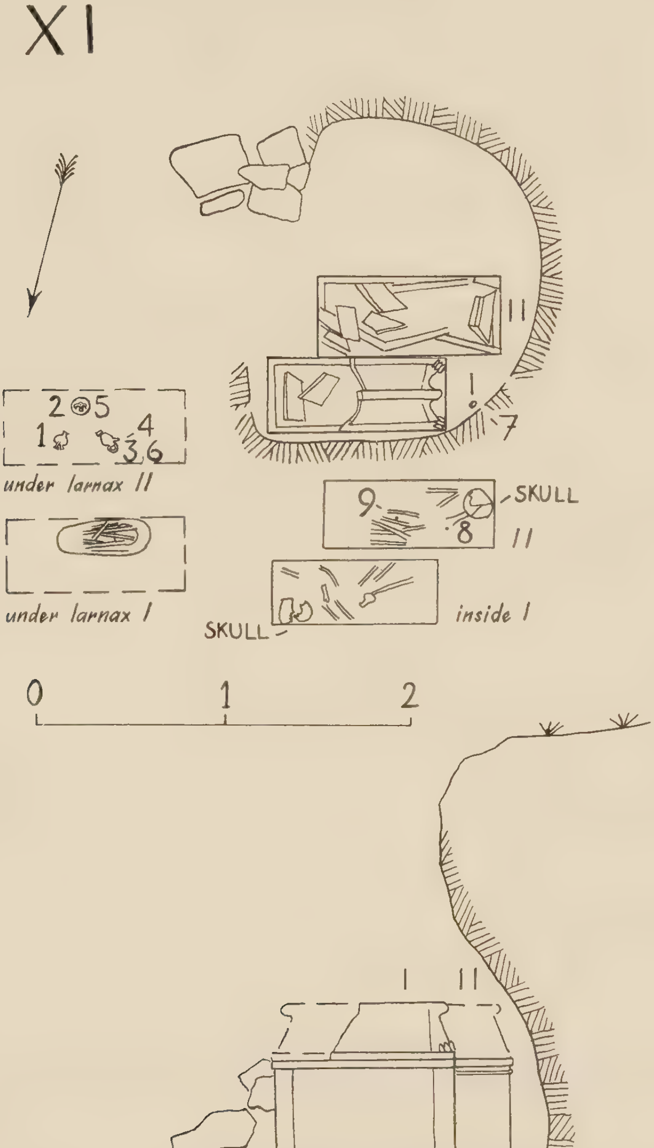

XI
II
I
7
2 5
1 4 3 6
under larnax II
under larnax I
9
8
SKULL
II
inside I
SKULL
0
1
2
I
II

FIG. 13. TOMB XI

---

[6] Cf. *BSA* xlvii. 249: Hospital Site Tomb III, and ibid. note 21 for others in Crete and on the mainland.

had been much damaged, and perhaps plundered in recent times; nothing was found in it. The two feet on the south side had been supported on stones to keep the larnax level. Larnax II produced a bead of haematite (**8**) and a very large but much decayed glass bead (**9**).

When larnax II was removed, however, there was found beneath it an interesting group of vases (PLATE 51*e*)—two small stirrup jars (**1**, **2**) and a spouted jar with a basket handle (**3**), which may be assigned to the end of Late Minoan IIIB 1 or the beginning of the next phase B 2; a small bronze point (**4**) and two conical spindle-whorls (**5**, **6**) found with them might represent the contents of a woman's work-box like the box identified below the larnax in tomb IV, but no traces of such a box were noted here. A third spindle-whorl (7) came from the corner of the tomb behind larnax I.

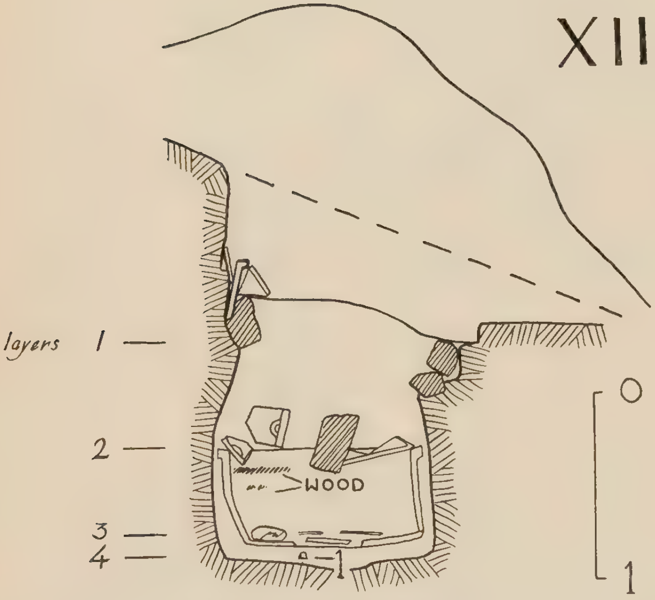


FIG. 14. TOMB XII, SECTION

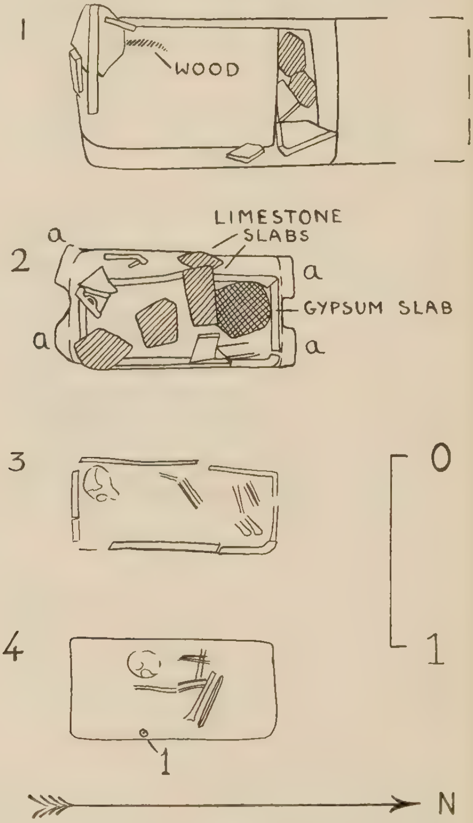


FIG. 15. TOMB XII, PLAN

Underneath larnax I was a small oval pit (L. 0·50, W. 0·20, max. depth 0·23), containing the bones of a very young person, a tightly contracted burial in position it seems, and not an earlier burial removed here (PLATE 51*f*).

Tomb XII (Plan, FIGS. 14, 15; PLATE 52*a*) was a small shaft-grave, only 1·35 long and 0·80 across at the top, with a ledge between 0·05 and 0·15 wide making a lower compartment (L. 1·30, W. 0·65) with the floor at a maximum depth of 1·45 below the ledge. This contained a larnax and remains of its gabled lid (FIG. 24), with fragments of a second very small larnax (FIG.

24*aa*) above it and at the sides.[7] Round the top of the larnax and fallen inside it were four or five slabs of roughly squared gypsum and limestone, some of them half a metre or more in length, which had evidently been covering slabs. Four vertical cuttings (*a–a* on plan, FIG. 15), about 0·15/25 wide, at the corners of the grave had presumably been made to give room for the ropes used in letting the larnax down into it.[8]

In the north-west corner of the larnax, between 0·07 and 0·14 below the top of the rim, was a large piece of carbonized wood, about 0·30 long, apparently burnt, with further slight traces of burnt wood below it. What these can have been is not clear; they did not seem like tree roots. Perhaps the remains of a lighted torch? The larnax contained traces of a skeleton with the head to the west—apparently of a very young person, as the small size of the grave and of the larnax itself would suggest.

Below the larnax was a space of about 0·20 above the floor of the grave, and here in an irregular cutting 0·10 deep lay another burial, also apparently of a very young person, in a tightly contracted position with the head to the west.

The only object from the grave was a conical spindle-whorl (**1**) found beneath the larnax and above the lowest burial.

Tomb XIIa. This rectangular pit (L. 1·25, W. 1·05), with rounded corners, and the floor less than a metre below the surface, may have been another small shaft-grave like tomb XII. There was no sign of a burial; but from the fill were recovered most of a plain spouted vase with a side handle (**1**), an interesting faience ornament in the shape of a figure-of-eight shield (**2**), and a glass or faience bead (**3**); these may have come from here or from some other disturbed tomb in the area.

Tomb XIII (Plan, FIG. 16), which lay in the southern continuation of the field bank with tomb IX, had a chamber of peculiar shape and character, against the south wall of which were the remains of a fine gable-lidded larnax, decorated in a style assignable to Late Minoan IIIA 2 (FIG. 25, PLATE 61*b–c*). But the tomb had unfortunately been thoroughly plundered, and nothing, not even a scrap of bone, was found inside the larnax, much of which had actually been removed outside the tomb where some pieces of it were recovered, though most had vanished. Fragments of at least one other larnax were lying against the wall of the tomb behind the decorated larnax and underneath it, and scattered elsewhere in the chamber.

The only other finds were a conical spindle-whorl (**2**) sitting upright on the floor at the far end of the chamber, and a small bronze pin or needle (**1**) near it. Below the north-east foot of the larnax was a patch of soft grey ash, filling a slight hollow in the rock, and overflowing down the step underneath the large stone *a*. Various other small irregular pits in the floor may have been made by plunderers searching for treasure.

The entrance was exceptionally (over 2 metres) long, and just 0·40 wide, hardly enough to admit a larnax. A few large stones in the fill of the entrance may have come from a blocking wall.

The strange character of the tomb, with its irregular chamber, high steps in the floor, and long narrow entrance, suggest that it may have been a rich and important one.

Tomb XIV (Plan, FIG. 17). This was a small chamber, of irregular crescent-shape and about 1 metre wide, in the field bank south of tomb XIII. The entrance had been destroyed and there was no sign of a dromos. About 0·20 above the original floor were scanty remains of two larnakes.

---

[7] There was one example of a shaft-grave containing a larnax at Zafer Papoura (*PT* 15, 50: T 34), and another in the Mavro Spelio cemetery (*BSA* xxviii. 283; tomb XX).

[8] Cf. some much later graves in the Kerameikos Cemetery at Athens (Karo, *An Attic Cemetery*, pl. 14*a*: 8–7 cent. B.C.).

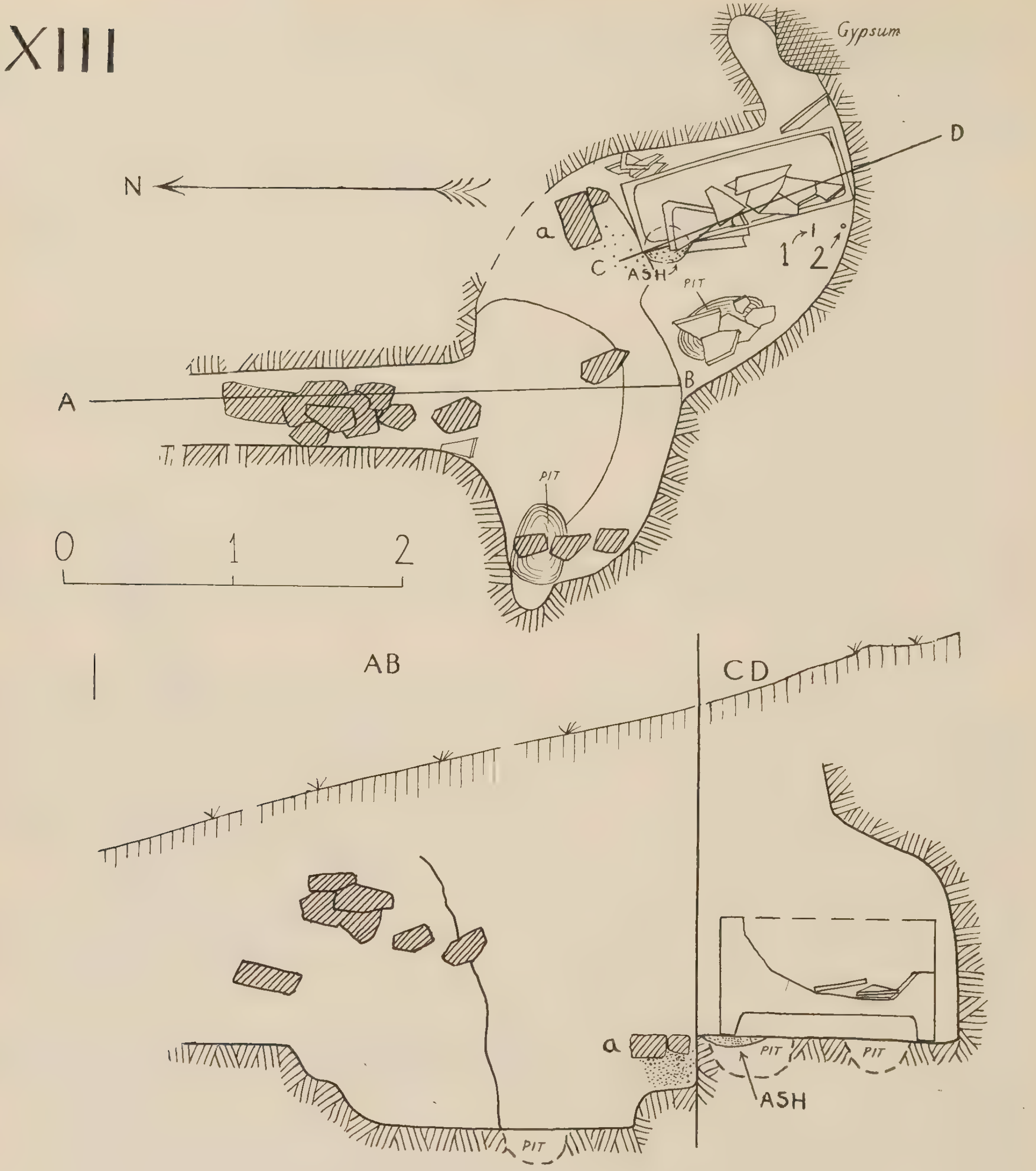

XIII
Gypsum
N
D
a
C
ASH
1
2
PIT
B
A
0
1
2
PIT
AB
CD
a
PIT
PIT
ASH
PIT

Fig. 16. Tomb XIII

At 0·16 above the floor by larnax II stood a brazier (**2**), and a very small stirrup jar (**1**) assigned to L.M. IIIB 1 lay on its side just below the edge of larnax I near a patch (about 0·15 × 0·10 × 0·026 deep) of fine grey ash with carbonized wood. The large irregular stone *a* below larnax I may have come from the blocking wall of the tomb.

In the bank about 20 metres south of tomb XIV (see Plan, FIG. 1) was found the skeleton of a young person in very good condition just below the surface. It was extended, with the arms folded across the breast, and the head to the west. Presumably it is a Christian burial, Medieval or more recent.

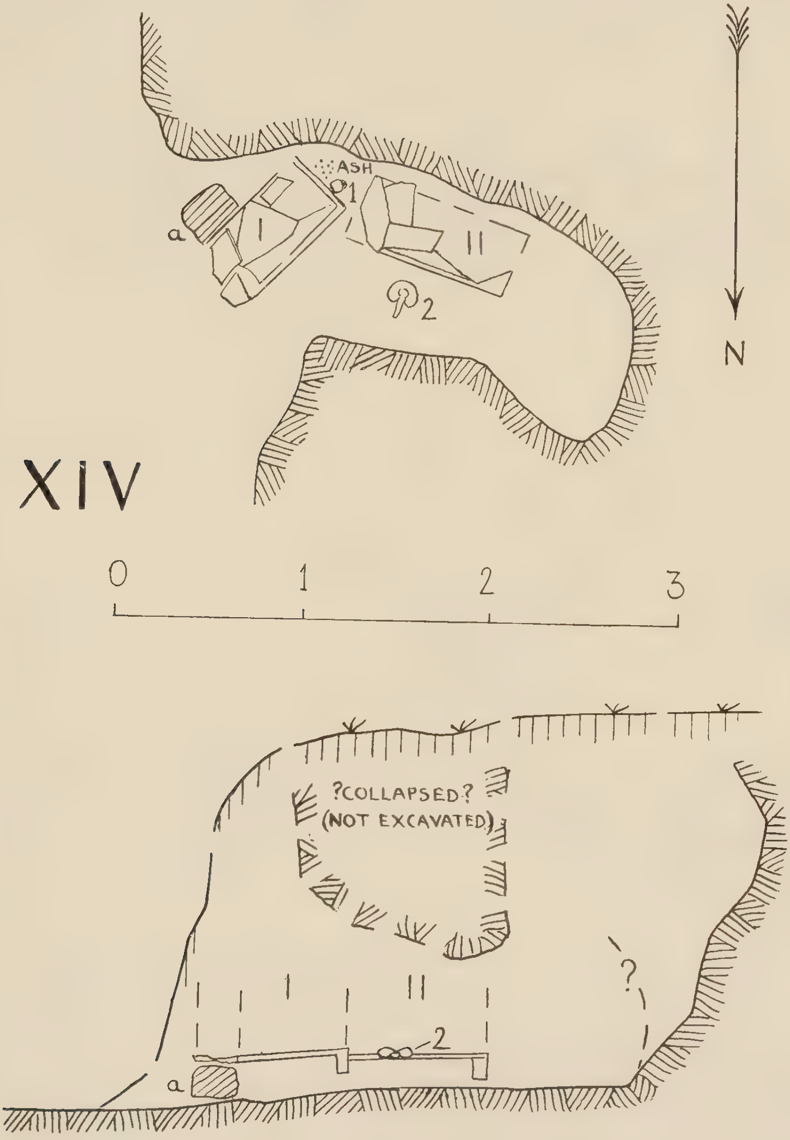


FIG. 17. TOMB XIV

Tomb XV (Plan, FIG. 18; PLATE 52*b*). This small chamber tomb was interesting because of the fine vases in it and the extremely clear traces of a wooden coffin. The dromos (L. preserved 2·0, W. 0·80) was entered by a high drop, and had an indistinct step half-way down its length. The top of the entrance had been destroyed, but the blocking wall, built of rough undressed stones, was standing to a height of 1·25, with a maximum thickness of 0·75. The chamber (L. *c.* 1·55, W. *c.* 1·0 or less) was only just large enough for one burial. Along its north side had been placed a wooden coffin containing the body apparently of a young person. On the floor by it were two clay vases, a jug (**1**) and a cup (**2**), decorated in a fine style assignable to Late Minoan IIIA 2.

The traces of the wooden coffin were unusually decisive. Its edge became clearly visible as a dusky patch with carbonized wood remains in it, at 0·34 above the floor at the south end of the tomb, and 0·20 above it at the east end. The wood traces extended over an area with a length of 1·50, nearly the whole length of the chamber, and a width of between 0·40/5. It is worth noting that the wood traces were found above as well as below the bones of the skeleton, which is good evidence (if any were needed) that they were those of a coffin with a lid, and not simply of an open bier. The line of the side of the coffin was traced downwards from the point above the floor where it first appeared, leaning inwards in the middle but somewhat outwards at the north end. From the position in which the remains of the skeleton were found, it appears that the body was placed in the coffin with the head near the door and the knees drawn up in the usual way, and that when the tomb collapsed the head, hands, and knees were pushed outwards beyond the line of the coffin.

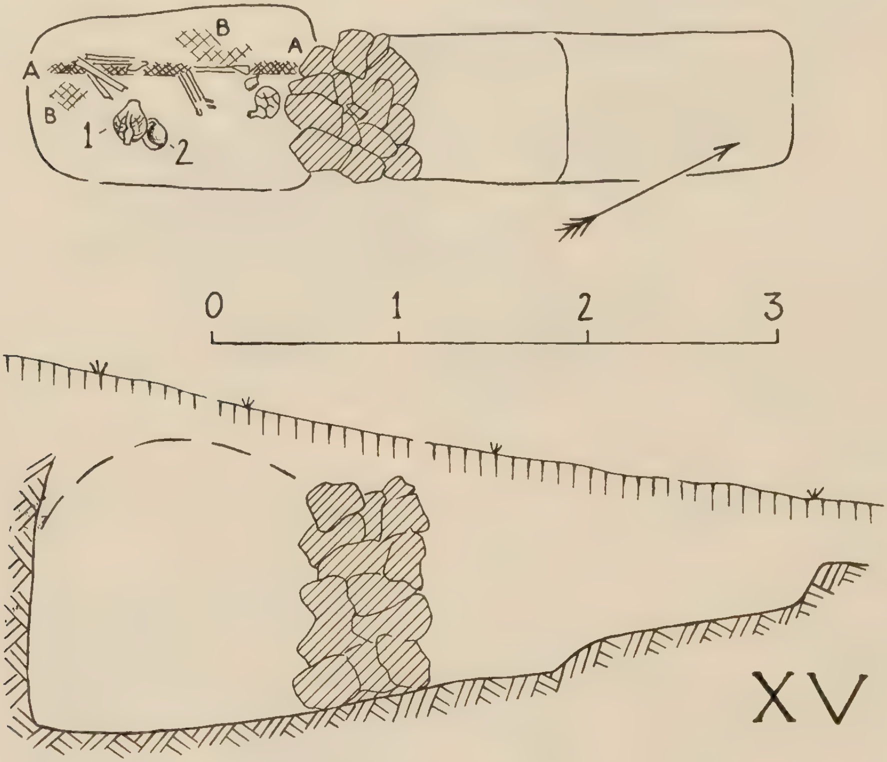


FIG. 18. TOMB XV

Tomb XVI (Plan, FIG. 19) was a kind of double shaft-grave just north of tomb XV. The shallower northern shaft (L. 1·30, W. 0·50 at the bottom) contained a larnax (FIG. 24*a*). There was no sign of a lid, and the top of the larnax, which was only 0·50 below the modern surface, had been slightly damaged by cultivation. Nothing was found in it except a badly damaged skull in the north-east corner and a scrap of a ? leg bone, the scanty remains, it appears, of a young person.

The southern shaft was covered by four or five large slabs of limestone, mostly worked and including two typical wedge-shaped Minoan building blocks. There was no ledge round the shaft, and from the way the slabs were lying, apparently in position, it seems as if they were put as a protective covering on top of earth which had been deliberately filled into the grave at the time of burial: there would in fact have been no question at any time of a hollow slab-covered chamber. This was also the impression in the case of the other shaft-graves II and XII in this cemetery, and of that by Hogarth's tombs (see p. 283).

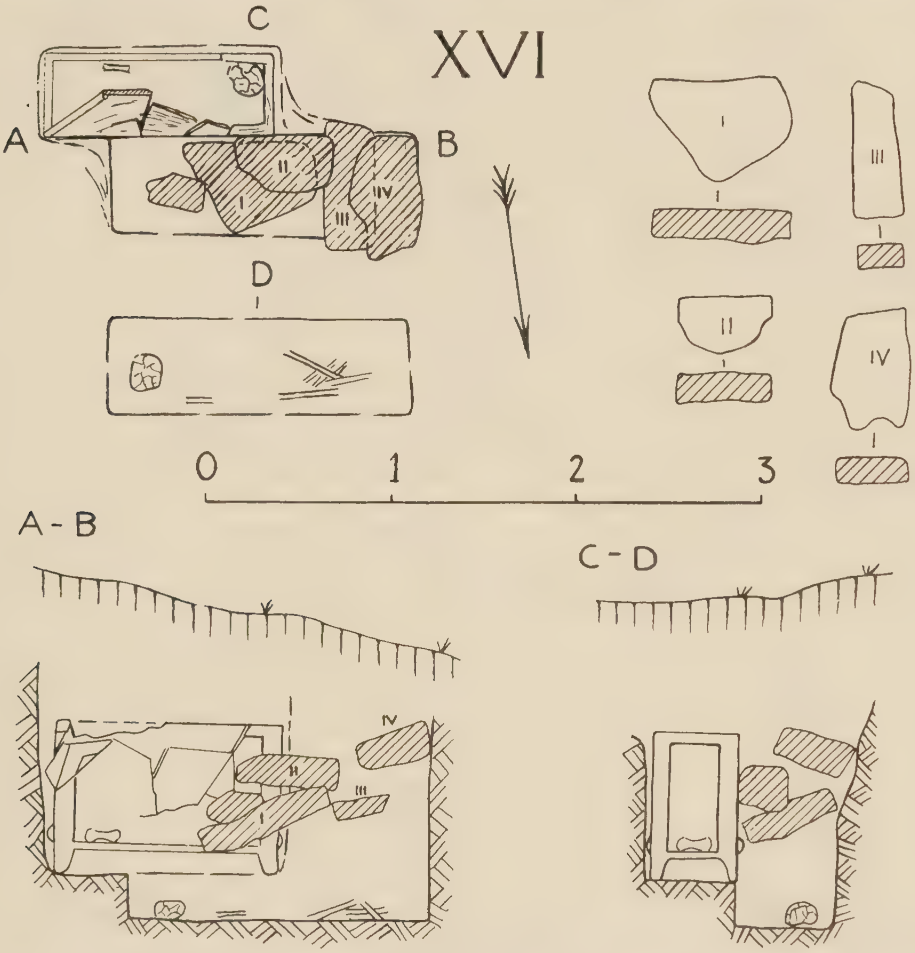


FIG. 19. TOMB XVI

This southern shaft (L. 1·66, W. 0·55 at the bottom) was cut to a depth of 1·30 below the top of the rock (2·00 below the modern surface) with the floor 0·25 lower than that of the northern shaft. On the floor were the poorly preserved remains of a skeleton with the head at the west end. No grave goods were found in either shaft.

The two shafts are in an alignment, which must be deliberate; but the larnax in the northern shaft partly overlapped the fill of the deeper southern shaft, and this burial must therefore be somewhat later, although perhaps not much later, than the other.

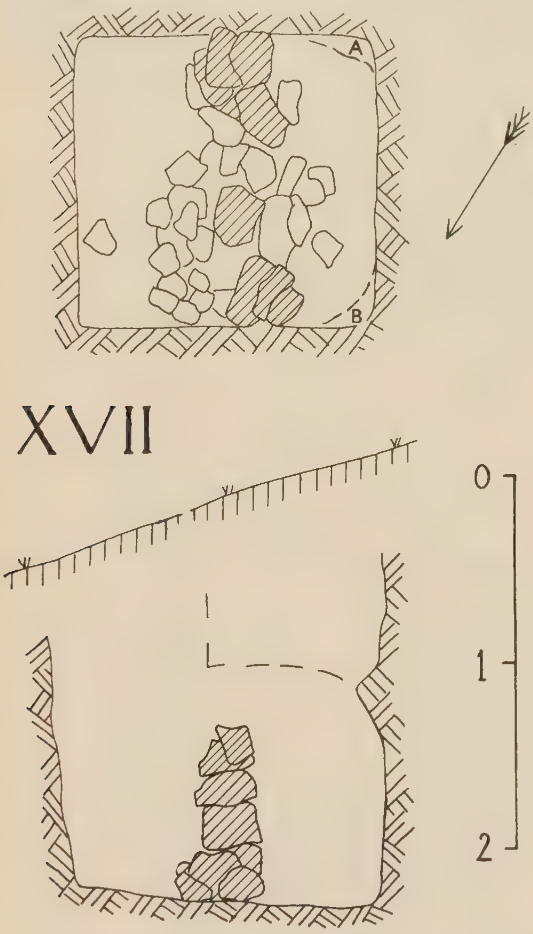


FIG. 20. TOMB XVII

Tomb XVII (Plan, FIG. 20) may have been a pit-cave, like the pit-cave tombs in the Zafer Papoura cemetery. It consisted of a square shaft (1·60 × 1·60) with the floor 1·80 below the top of the rock (2·30 from the modern surface), and the remains of a blocking wall were still standing to a height of 0·60 or more across the middle at the bottom. The burial cave had evidently occupied the west half of the tomb, since, although the vault had collapsed, the spring of it was preserved in the corners *A*, *B*. Nothing was found in the tomb, which had clearly been ransacked and plundered.

Tomb XVIII (Plans, FIGS. 21 and 22; PLATES 52*e–f*, 53*a–b*). The large kidney-shaped burial chamber[9] of this Middle Minoan tomb was entered through a very wide opening, nearly 1·50 across, which was blocked by a massive wall (Ht. 1·20, max. W. (at top) *c.* 1·30, *c.* 0·50 thick); the wall consisted of two large boulders (L. 1·10, Ht. 0·40 and 0·70) with a packing of kouskouras clay and smaller stones in the joints between them and at the sides (PLATE 52*e*). A pair of rough steps led upwards from the chamber through this opening into an ante-chamber, whose floor level was about 0·70 higher than that of the chamber. The ante-chamber seems to have been more or less oval (L. about 2·00, W. 2·80), but its south and east sides were hard to determine: there was some hint of an entrance with a step 0·20 high to the modern rock surface on the east side. There were no signs of any burials in the ante-chamber, and no vases or other objects were recovered from its floor, while the fill had not the character that would undoubtedly indicate the collapse of a chamber; so that, although below ground level, it might have been from the first an open court, as appeared to be the case in one of the Middle Minoan tombs at Mavro Spelio.[10] But the sides seemed to have a slight overhang, and it may therefore have been a roofed chamber after all.

From the fill of the ante-chamber, and more especially from that of the collapsed chamber, a

---

[9] This shape with a pillar left in the middle of one side to help support the roof is a natural one for a large rock-cut chamber. Cf. The M.M. tomb VII in the Mavro Spelio cemetery (*BSA* xxviii. 246, 261) and L.M. tombs at Isopata (*TDA* 30, fig. 40: T. 6 and T. 2 (Tomb of the Double Axes)). For tombs of this shape of the end of the Middle Bronze Age (Hyksos period) in Palestine, see Tell Fara (Petrie, *Beth-Pelet* i, pl. xvii, ii, pl. xlv. Cf. Schaeffer, *Strat. Comparée* 164–5, fig. 133). They also occur in Cyprus (Åström, *The Middle Cypriote Bronze Age* (1957) 8, fig. 6).

[10] *BSA* xxviii. 259: tomb VI.

XVIII

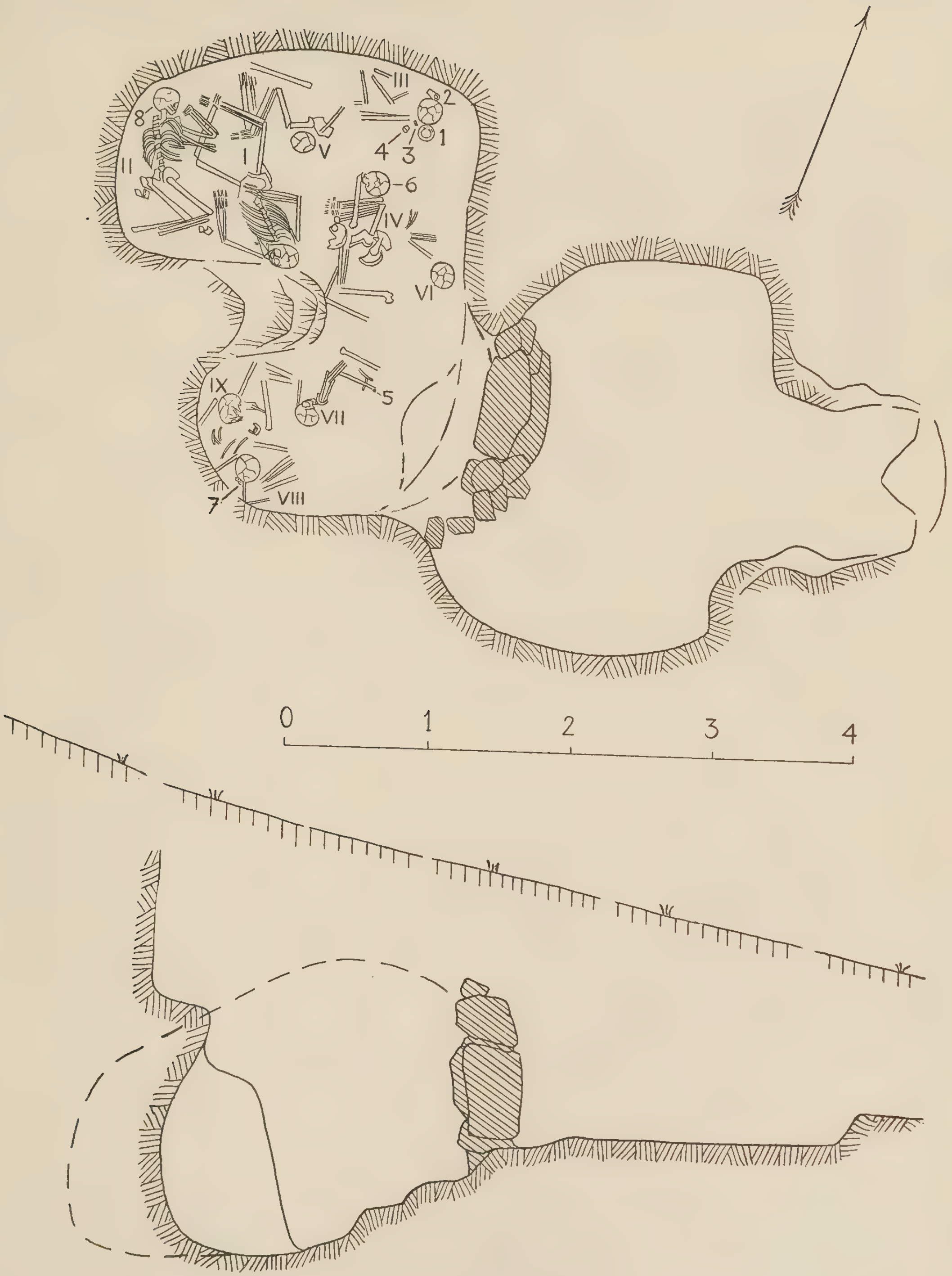

8
II
I
V
III
2
1
4
3
6
IV
VI
IX
VII
5
VIII
7
0
1
2
3
4

Fig. 21. Tomb XVIII

large amount of pottery was recovered, together with terracotta figurines and bits of stone bowls. The fragments of pottery, in a fresh condition with the edges of the breaks sharp and not worn, would suggest that the chamber had collapsed at an early date and that the hole left by the collapse had filled soon afterwards with rubbish.

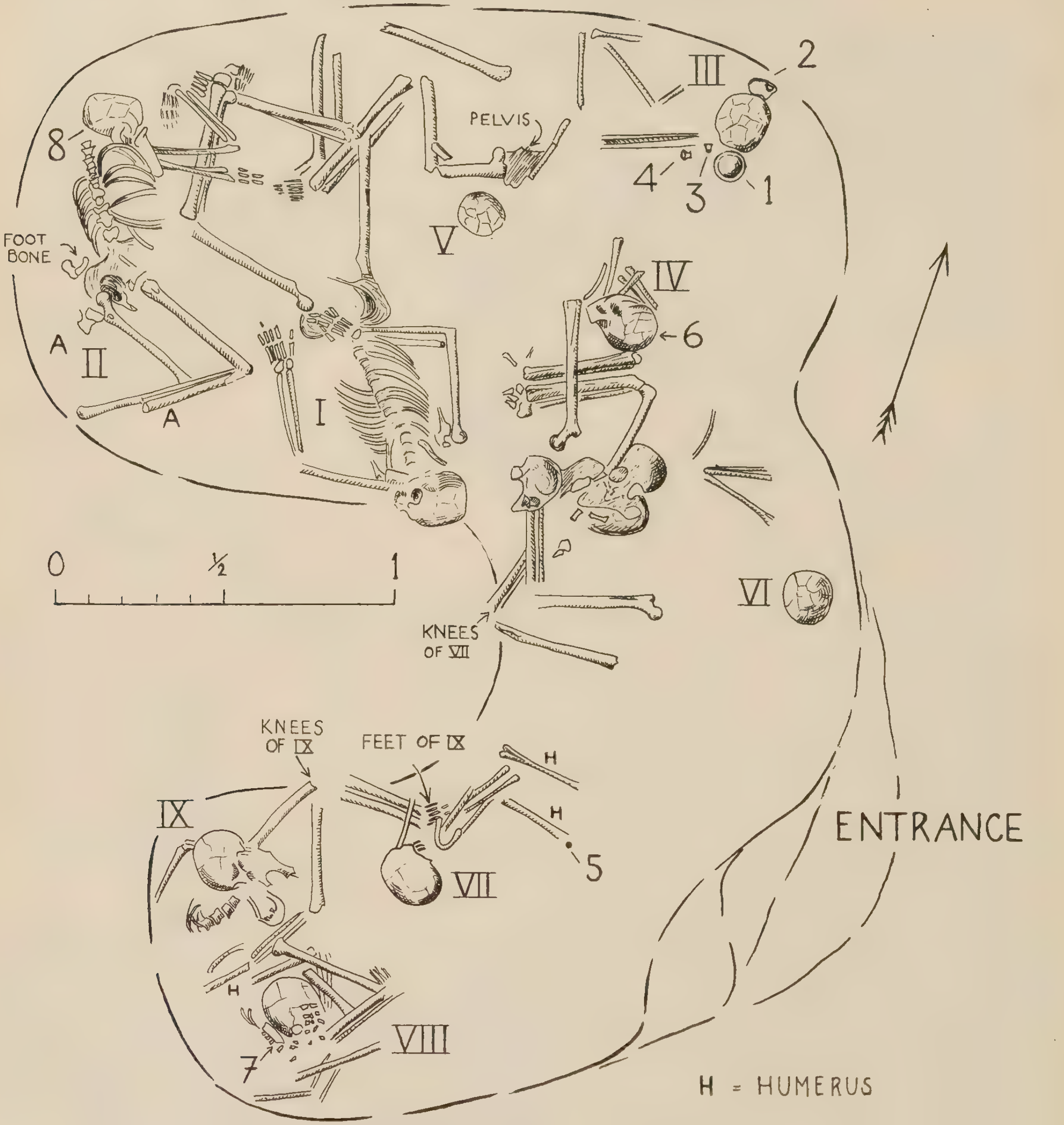

2
III
PELVIS
8
4
3
1
V
FOOT BONE
IV
6
A
II
A
I
0
½
1
VI
KNEES OF VII
KNEES OF IX
FEET OF IX
H
H
IX
5
ENTRANCE
VII
H
VIII
7
H = HUMERUS

Fig. 22. Tomb XVIII: chamber

The pottery seemed to be very homogeneous, of a developed Middle Minoan type with features indicating the early part of Middle Minoan III, like the jar fragment with moulded plant decoration (**22**) which according to Evans is characteristic of M.M IIIA; there was nothing typical of the later phase, M.M. IIIB. The sealstone (**5**), and the four small clay vases (**1–4**), found with the burials in the tomb itself, also seem to point to a date in this period (M.M. IIIA), or towards the end of Middle Minoan II at earliest.

The character of the pottery and of the other objects from the fill suggest that they are rubbish from domestic occupation, not remains of votives or offerings connected with the tomb (see p. 198). Terracotta figurines like **30–33** may have been made for some religious purpose, and not simply as toys—such figurines are habitually used as votives in Middle Minoan sanctuaries;[11] but they are too few and fragmentary to have had any connexion with a tomb cult here. From the fill came scraps of plaster with a red painted surface, some of which were actually recovered from the burial level in the chamber. Two large lumps (Plan, FIG. 22, *A–A*), one (0·03 × 0·03) below the knees of burial II, the other (0·05 × 0·03) between it and the wall of the tomb, both lying face downwards, might suggest that the roof of the chamber had been coated with red plaster; but there were fragments of pottery in the fill right to the floor level, and scraps of red-painted plaster were found not only here, but throughout the fill and elsewhere with Middle Minoan sherds in the cemetery area. There were pieces, for instance, in the fill above the shaft-grave II, and other bits at floor level in the collapsed chamber of tomb XIII. Other objects from the fill include a fragment of ostrich egg (**34**) and a bit of a clay crucible with bronze traces in it (**23**).

Above the floor of the chamber lay the remains of at least nine burials, six in the larger northern compartment and three in the southern near the entrance. At the far west side of the northern compartment was an interesting pair of two skeletons, perhaps a man (I) and a woman (II), which may be the latest burials in this part of the tomb: they were clearly undisturbed, and in very fine condition, with the ribs and finger bones intact (PLATE 53*a*). The larger skeleton (I) lay on its back with the knees bent outwards and the feet crossed—they had no doubt been tied together—while the hands had originally perhaps been placed in the pubic region. For the position of the legs it is interesting to compare the central skeleton in grave Γ and others in graves M and N in the new shaft-grave circle at Mycenae.[12] The skull was touching the side of the tomb, and it seems as if the body may have been resting with its back on a cushion against the wall. The second skeleton (II) lay on its side in a flexed position with its hands in front of its face and its arms above the left knee of the first (I). A small bronze bead (**8**) was recovered from behind the skull.

The other burials in the northern compartment (PLATE 53*b*) seemed to be earlier and mostly somewhat disturbed. Bones which appeared to belong to burial III lay underneath the right leg of skeleton I. Round the skull of III was a group of four small vases, a bowl (**1**), a juglet (**2**), and two miniature cups (**3**, **4**), all very plain and simple. These were the only vases found on the floor of the tomb, and they may have been placed there, not at the time of burial, but to placate the dead when the remains of the body were deranged on the occasion of a later burial in the tomb.[13] A femur, for instance, by skull V, apparently part of skeleton III, was found broken in two pieces which were lying at an angle as if somebody had stepped on the bone; but this might have been caused by the collapse of the tomb roof.

Burial IV seemed to be more or less undisturbed, for the foot bones were in articulation; the body was flexed, with the arms raised to the face, and appeared to underlie, and to be earlier than, burial VI, of which only somewhat scanty traces remained. Beneath the skull of IV were found two plain silver ear-rings (**6**). Skull V may have belonged to a child; no bones were identified which certainly went with it.

---

[11] See the account of Middle Minoan Peak Sanctuaries by Platon (*KCh* 5 (1951) 96 f.).

[12] *ILN* Sept. 27th 1952, p. 507, fig. 12. Ibid. Mar. 6th 1954, p. 364, fig. 9. *PAE* 1952 (1954) 443, figs. 12, 13; 1953 (1956) 222, fig. 11, 226, fig. 13.

[13] A number of miniature vases, found in an ossuary pit in one of the Middle Minoan tombs on Ailias east of Knossos (excavated in 1953 and not yet published) had evidently been placed there as offerings to placate the dead at the time their bones were swept into the pit.

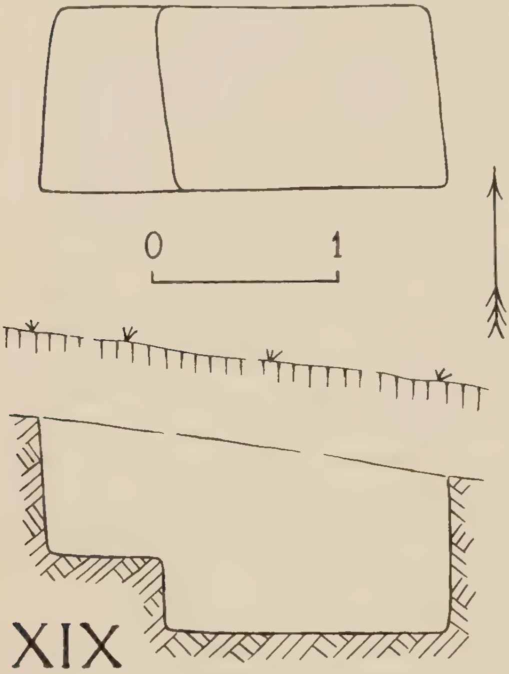


Fig. 23. Tomb XIX

The three burials (VII–IX) in the southern compartment (PLATE 52*f*) did not appear to be much displaced or disturbed, although the skeletons were not in a very good state of preservation and the bones were not well articulated. It looks as if the bodies had been tightly trussed into the contracted position, and then set squatting upright with their backs against the wall of the tomb. With burial VII, which had apparently been sitting against the rock pillar dividing the two compartments, was found an interesting sealstone of hammered silver or meteorite (**5**) with a fine engraving of a Cretan wild goat in a rocky landscape. This was lying on edge underneath an arm bone of the skeleton, but there was no evidence as to how it had been worn. The only other find with the burials was a small bronze link (**7**), recovered from beneath the lower jaw of skeleton VIII; one of the teeth of the jaw was green from contact with it.

The virtual absence of grave goods in this tomb, a feature paralleled in other large tombs of the Middle Minoan period explored at Knossos,[14] was not necessarily an effect of poverty or of plundering. The finds, apart from the four little clay vases **1–4**, which may have a special significance (see p. 223 above), are all probably objects of intimate personal adornment worn by the corpse at the time of burial. The custom of placing inside the tombs vases with food and drink, and other grave goods for the use of the dead, seems to develop at Knossos towards the end of the Middle Minoan and beginning of the Late Minoan period, when a tendency towards burial in private and individual graves, as opposed to communal or family vaults, also begins to be marked; this might be taken to reflect a growing Egyptian influence on life and thought in Crete about that time.

Tomb XIX (Plan, FIG. 23). This small roughly rectangular pit, with a step about 0·40 high at one end, may have been a shaft-grave, but nothing was found in it. L. at the bottom 1·40, with the step about 2·00; W. 0·90. Depth below the top of the rock 0·80–1·00, below the modern surface about 1·50.

SINCLAIR HOOD

---

[14] e.g. in tombs in the Ailias cemetery.

	TOMB	*No. of burials*	*Periods of use*	DATE *Based on:* P = *Pottery* L = *Larnakes*		CLAY VASES		WOODEN COFFINS	CLAY LARNAKES	BRONZES		OTHER FINDS	
						Decorated	*Plain undecorated*			*Razors, etc.*	*Knives*		
GROUP 1	I	2	1?	III A 1/2	P	4		2		1 one-edged razor 1 two-edged leaf razor	2 one-edged knives		
	II	1	1	III A 1/2	P	1		?				2 sealstones	1 amber bead
	III	1	1?							1 O finger-ring			
	IV	3?	2?						1	1 O finger-ring 1 ◄ point		Wooden box	Ivory comb 1 spindle-whorl
	V	2	1?					?		1 one-edged razor			
	VI	4	1?	III B/1? III A/2?	P L		2		4 (1 Dec)	1? two-edged leaf razor	1 one-edged knife		1 spindle-whorl
	VIa			III B/2	P	3							
	VII	3	2?	III B/2	P	9	2		1 (Dec)	4 pins	1 one-edged knife of IRON	2 sealstones	1 amber bead
	VIII	1	1							1/2 O finger-rings			
GROUP 2	IX	3	3?	III B/2	P	1	1		1	1 Ʊ ear-ring			
	X	5	3?	III A/2	P	1	1		2	1 one-edged razor	1 mirror	Wooden box	Gold, &c., beads
	XI	3	2?	III B/1? 2	P	3			2	1 ◄ point			3 spindle-whorls
	XII	2	2? 3						1				1 spindle-whorl
	XIIa						1					Fig.-of-8 shield ornament	
	XIII	1?	2?	III A/2?	L				1 (Dec)	1 pin or needle			1 spindle-whorl
	XIV	2?	2?	III B/1	P	1	1		2				
GROUP 3	XV	1	1	III A 1/2		2		1					
	XVI	2	2?						1				
	XVII	1?	1?										
	XVIII	9	?	M.M.			4			1 Ʊ ear-ring		1 sealstone	
	XIX	1?	1?										

COMPARATIVE TABLE OF THE FINDS FROM THE CEMETERY

THE LATE MINOAN POTTERY

The numerous pots found in the Gypsades cemetery[1] are interesting both for their range in time and for the evidence they provide concerning the occupation of Knossos in the second half of the Late Minoan period. The earliest pots found, the L.M. IIIA vases, are the natural successors of the Palace Style at Knossos, and the Sub-Minoan vases are the precursors of the earliest pottery in the Fortetsa cemetery, where the ceramic development into Protogeometric may be followed. The Late Minoan pottery from the tombs amounted to thirty whole vases of twelve basic shapes. By far the most common vase was the stirrup jar, of which most examples belonged to the end of the L.M. IIIB period. Of the twelve examples in the collection six (VII. **3**, **4**, **5**, **6**, **7**, **8**) came from tomb VII, the latest tomb; with them were found the two belly-handled amphorae (VII. **1** and **2**), which appear late both in Crete and on the mainland of Greece. Only one stirrup jar (I. **4**) earlier than L.M. IIIB in date was found. None of the other shapes was represented by more than two vases. The absence from the cemetery of the tall-stemmed kylix and of the deep bowl, which are common in Mycenaean IIIC tombs of Mainland Greece, is noteworthy.

There were six undecorated vases: two miniature bowls (VII. **11** and IX. **2**), two shallow cups (I. **3** and XV. **2**), and two braziers (XIV. **2** and X. **2**). The vases with the finest decoration, a rhyton (I. **1**), and a tall spouted jug (I. **2**), a shallow cup (I. **3**), and a piriform stirrup jar (I. **4**), were found together in tomb I; all belong to the L.M. IIIA period.

The development of the pottery confirms the results stated by Furumark in his detailed analysis of L.M. IIIB and Sub-Minoan pottery, in a section of his article 'The Mycenaean IIIC Pottery and Its Relation to Cypriote Fabrics' (*Op Arch* iii (1944) 222–30). The evidence from tomb VII, however, suggests that the end of L.M. IIIB 2 and the beginning of Sub-Minoan cannot be defined precisely, since stirrup jars (VII. **7**, **3**) of L.M. IIIB 2 style were found above the belly-handled amphorae (VII. **1**, **2**), which are Sub-Minoan. It may be doubted, moreover, how far the distinction made between the L.M. IIIA 1 and the L.M. IIIA 2 styles of ceramic decoration indicates a corresponding chronological division between the two types of pottery, because vases of both styles were found together in tomb I. The material from Gypsades confirms that there are no grounds for distinguishing a L.M. IIIC style. Much of the innovation in the Mycenaean IIIC period did not affect Crete, where the conservative L.M. IIIB 2 styles, which developed into Sub-Minoan, were contemporary with the Mycenaean IIIC 1 pottery of Mainland Greece.

Some fragments of finely decorated L.M. I–III vases were found in the trial trenches, and in the fillings of the dromoi and collapsed chambers of the tombs (PLATES 57*f*, 58*a*). Among the most interesting were two pieces, having gritty yellow clay, which belonged originally to a large vase decorated in dark brown to red paint with papyrus flowers (PLATE 57*f*); the bottom piece preserves horizontal lines, which marked the underside of the belly of the vase, above which rests a wheel, having four spokes and a triangle in each of the four quadrants. The papyrus flowers are very similar to those of the larnakes from tombs VI (larnax IV) and XIII (see p. 227), which on Furumark's system should be assigned to L.M. IIIA 2.

Three fragments (PLATE 58*a*, 4–6) come from the base and shoulder of a jug or jar (perhaps a three-handled amphora) of a distinctive fabric with soft reddish clay, coated with a white slip, and decorated in red to brown paint with a scale pattern (cf. *MP* Motive 70, 2: Myc. IIIA 1). The elaborate scale pattern of PLATE 58*a*, 7 is somewhat similar to *MP* Motive 70, 5: Myc. IIIA 2. The lip of a rhyton (PLATE 58*a*, 1) has a foliate band of L.M. I–II type, cf. *MP* Motive 64. The rims with a tortoise-shell ripple pattern (PLATE 58*a*, 2) and a plant (PLATE 58*a*, 3) are also perhaps of L.M. I or II date.

---

[1] I am very grateful to the Craven Committee, Oxford University, for permisssion to work on the pottery from Gypsades when holding the Derby Scholarship. My thanks are due to Mr. V. R. Desborough for discussing the vases from tomb VII with me.

GEORGE HUXLEY

CLAY LARNAKES

(FIGS. 24, 24*a*, 24*aa*, 24*b*, 24*c*, 25; PLATE 61)

Some sixteen clay coffins or larnakes of the well-known Late Minoan type with gabled lids were recovered from nine tombs (IV, VI, VII in the first group, all the tombs IX–XIV of the second, and XVI of the third). They were made of coarse gritty pithos fabric, with the surface orange, paler orange or buff, or greenish, due to wet-smoothing or the application of a thin slip. The chests were between 0·75 and 1·20 long, standing to a height of about 0·50–75 including the legs but without the lids. One larnax (larnax II from tomb VI) had never apparently had any legs. One very small larnax (larnax II from tomb XII), only 0·67 long, was evidently for a child (FIG. 24*aa*). The sides normally had panels, inlet or suggested by incised lines, no doubt imitating panels of the wooden originals from which the larnakes were clearly copied. There were normally four vertical handles on the chest, two each side, and corresponding handles on the lid.[1] But in some cases (e.g. larnax IV from tomb VI and that from tomb VII) the handles were replaced by perforations for ropes through the corners of the chest. The lids of these larnakes had curious small ribbed handles set on the four corners.

All the larnakes were plain and unornamented, except for that from tomb VII, with a simple decoration of straight and wavy stripes in red paint; together with larnax IV from tomb VI, and the fine example unfortunately much destroyed from tomb XIII, which both had designs of spirals and papyrus flowers of a type classified by Furumark as Late Minoan IIIA 2.[2]

Only these three decorated larnakes were kept and restored. The rest were buried in the tombs in which they were found.

(1) Tomb VI: larnax IV (FIG. 24*b*; PLATE 61*d–f*). Chest mended. Lid too damaged to be restored. L. 1·14, W. 0·42–43, Ht. (without lid) 0·64. Chest with inset panels, and four rope holes, one through each corner. Orange clay with abundant grit, dominantly red and grey, but some white, showing in the surface, which is smoothed. Decoration in dark to light brown and red lustrous paint, rather worn. On the two end panels and on one long side, four horizontal bands of running spirals, separated from each other by two or three horizontal lines; on the other long side, four papyrus sprays growing from the bottom of the panel; interlocking zigzags on the faces of the columns at each of the four corners; the sides of the columns decorated with meanders.

For the shape and papyrus decoration cf. the larnax in *PT* 91, fig. 102*a* and *b*: L.M. IIIA 2 (Furumark): but here the papyrus sprays bend over to the right instead of growing vertically. The spirals are of a type common in L.M. I and later.

---

[1] Cf. *PT* 8, fig. 3*b*.

[2] Cf. *PT* 91, fig. 102; L.M. IIIA 2 (Furumark).

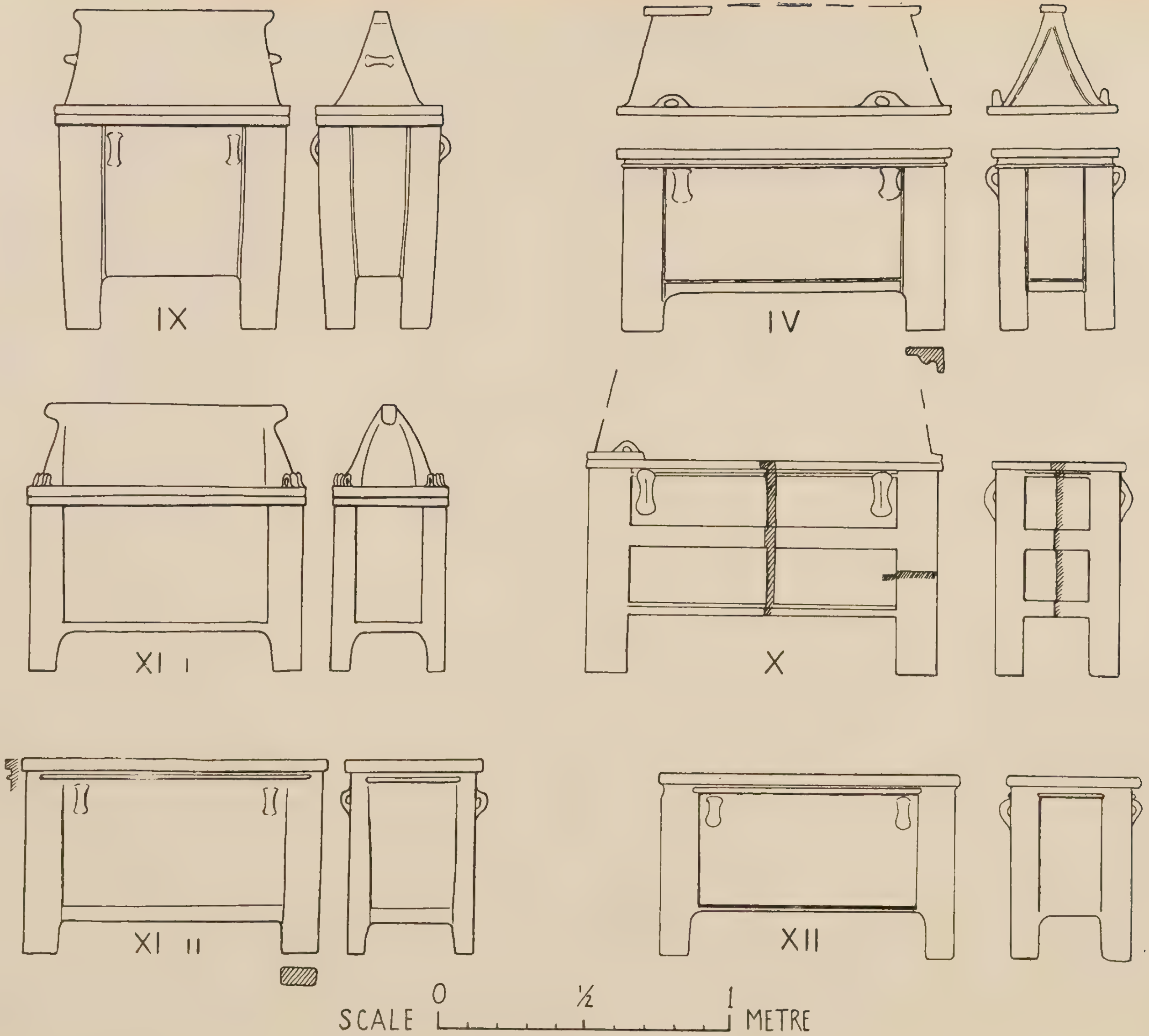

IX
IV
XI i
X
XI ii
XII
SCALE
0
½
1
METRE

Fig. 24. Clay larnakes

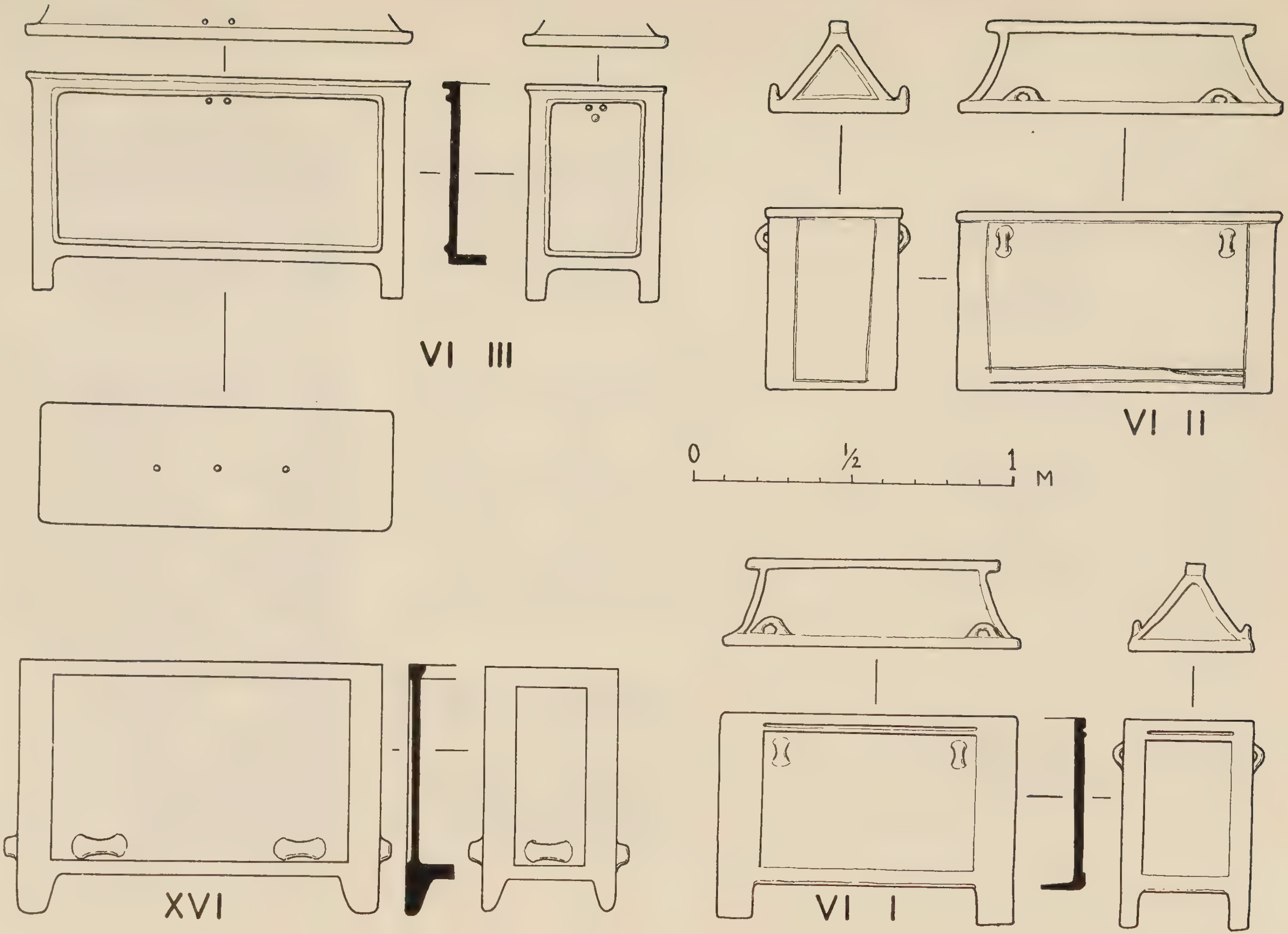

VI III
VI II
0
½
1
M
XVI
VI I

FIG. 24*a*. CLAY LARNAKES (1:20)

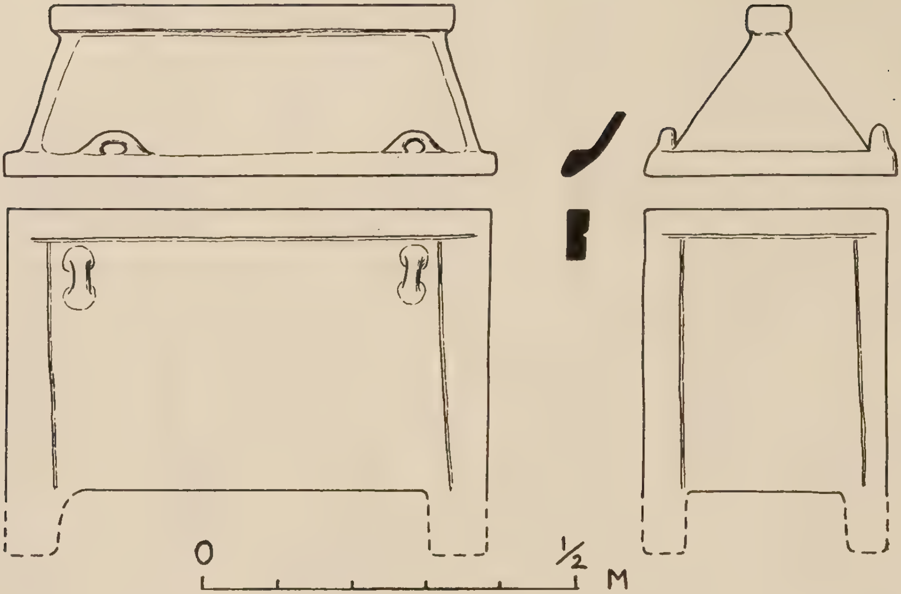


Fig. 24*aa*. Larnax II from Tomb XII

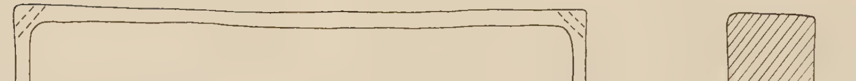


Fig. 24*b*. Larnax IV from Tomb VI

(2) Tomb VII (FIG. 24*c*; PLATE 61*a*). Chest and lid mended. L. 1·08, W. 0·40, Ht. (without lid) 0·72–73, (with lid) *c*. 1·0. The chest is unusual in having no panels indicated. Four rope holes in the corners of the chest, as in (1), and small ribbed loop handles corresponding to them on the corners of the lid. A thick rim runs round the top of the chest. Orange clay with abundant straw, and grit dominantly grey but some red and white. Decoration in black shading to red and dark-brown lustrous paint, consisting of groups of wavy lines which run vertically from top to bottom of the chest and lid.

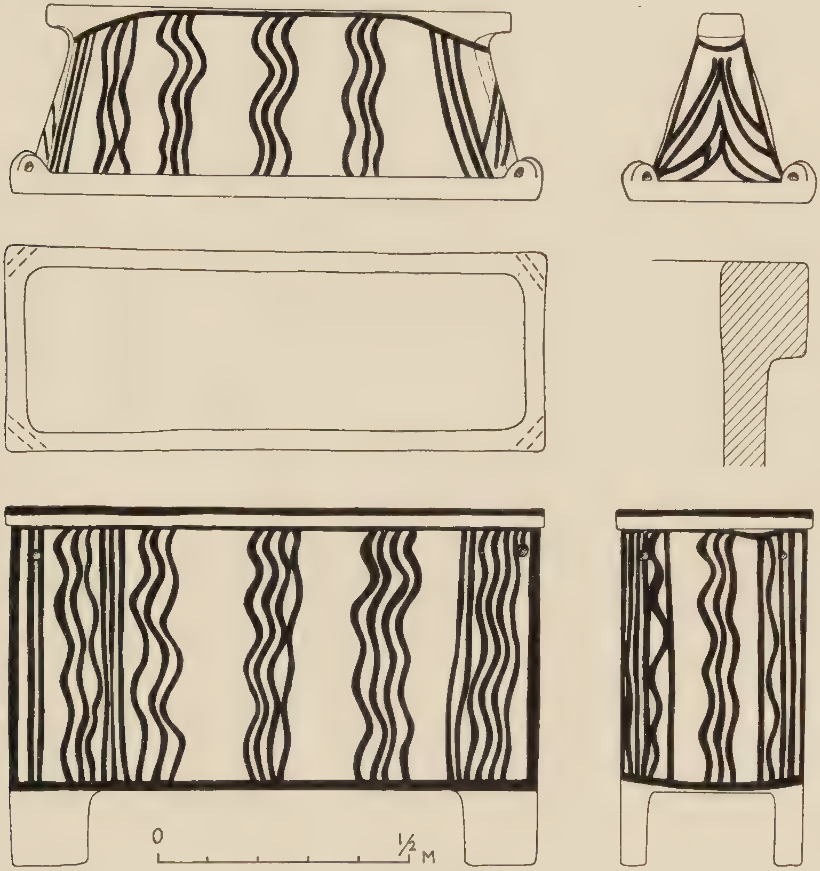


FIG. 24*c*. LARNAX FROM TOMB VII

The simple style of the decoration with groups of wavy lines suggests a late date for the larnax (L.M. IIIB 2?); but the traditional shape is well preserved, except for the absence of panels.

(3) Tomb XIII (FIG. 25; PLATE 61*b*, *c*). Chest and lid. Large parts of sides and ends missing; but the base and four columns at the corners of the chest, together with the ridge of the lid, preserved intact. Sunk panels on the sides and ends of the chest, which had four vertical handles; the corresponding handles on the lid do not survive. Fabric as in (1). On the long sides of the chest and lid four rows of interlocking spirals; one end panel of the chest has a papyrus like those of (1).

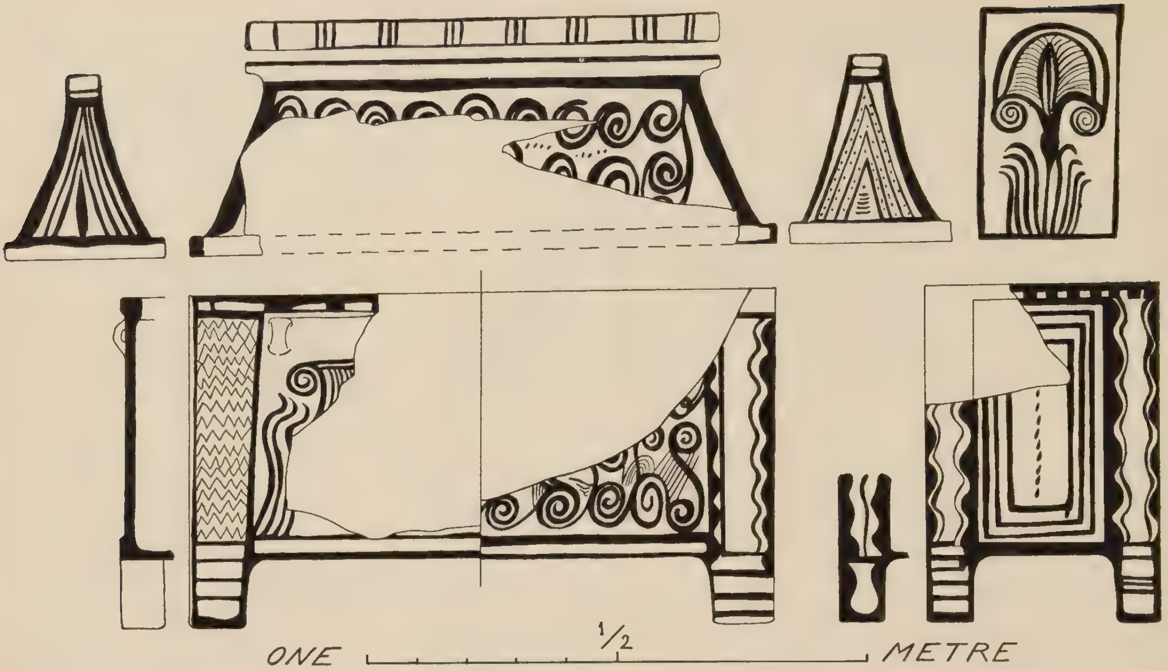


Fig. 25. Larnax from Tomb XIII

Probable date L.M. IIIA 2. For a decorated larnax of similar shape cf. *BSA* xxviii 271, fig. 26, from the Mavro Spelio cemetery, assigned by Furumark to L.M. IIIA 2. This has argonauts in the panel of the long side, but the lid is decorated with a wave design exactly similar to that on the columns of the chest in our larnax. For the papyrus of the end panel on our larnax, compare (1).

Sinclair Hood
George Huxley

The Bronzes

The Knives. Three complete one-edged knives, and one fragmentary, were found in the tombs. The bronze knive (I. **5**) belongs to a small group in which the whole of the handle including a T-shaped pommel extension was cast in one piece with the blade, while inset panels of perishable material were secured by rivets and deep flanges in the metal. Apart from this pommel-flange it is similar to a large contemporary group of bronze knives to be found throughout the Aegean.[1]

One-edged knives with flanged handles are at least as old as the Shaft-grave period at Mycenae. In Crete a riveted handle without flanges was preferred from Middle Minoan times, but the flanged handle appears at the end of Late Minoan II or the beginning of IIIA.[2] The pommel-flange is rare, though found occasionally on both riveted and unriveted knives. The earliest dated example is probably that from the Palace of Mycenae found with other objects of Late Helladic II or early III date; one comes from Dendra, Chamber Tomb 7, and one unriveted from Chamber Tomb 2, dated L.H. IIIB.[3] The Mycenae knife has not the true T-projection but only a broadening at the end of the handle which is in shape very like handles of Levantine daggers and two-edged knives found in the so-called 'Hyksos tombs' of Ras Shamra and at Tell el Ajjul, Tell Fara, and elsewhere in Palestine.[4] The Dendra Tomb 7 knife is longer than ours, 0·41, with five instead of three long rivets but with the same ornamental short rivets between them and a similar profile to the pommel. A more exaggerated T-projection is found on the dagger from the same group of Dendra bronzes.[5]

---

[1] *PT* 23, fig. 113, from Zafer Papoura, T. 3 is particularly close to this form (dated L.M. IIIA); for a general description of Aegean knives see *PPS* xxi (1955) 147.

[2] *TDA* 58, fig. 54, 2*d*, from Isopata T. 2.

The adoption of the pommel-flange on one-edged knives is part of the same movement which introduced it to Aegean swords, daggers, and two-edged knives. In all cases it appears on weapons and tools which are in other respects typical of well-established types, such as the cruciform sword or round-shouldered dagger, with flanged tang which ended straight or in a small projection with a single rivet-hole.[6] It does not therefore mark the appearance of a new instrument but of a new hafting device which was adopted more or less simultaneously in Crete, in the Dodecanese, and on the mainland of Greece. The Gypsades knife may be among the earliest examples; others are the cruciform sword in the 'tholos' tomb at Palaikastro in East Crete, probably L.M. IIIA,[7] and another at Ialysos, N.T. 4, and a round-shouldered sword or dagger from Thebes, Ismenion Tomb 5, both L.H. IIIA 2.[8]

The direction from which the device came is not in much doubt. The dagger already referred to from Ras Shamra 'caveau LVI' is only very approximately dated between the eighteenth and sixteenth centuries nor is the case better with the majority of Syrian and Palestinian weapons;[9] but the dagger of Apophis I confirms its use in the Hyksos period (seventeenth century?), and the type of handle remained popular throughout the Levant into the Iron Age.[10] (The origin of the flanged tang without pommel-extension is an allied but separate problem.) The appearance in the Aegean of this practical improvement, which was to become so characteristic of the later tools and weapons, was probably a direct result of the opening-up of the Levant in L.H. IIIA of which there is so much evidence from imported and locally imitated Mycenaean wares. The quantity of mainland Greek, as against Minoan vases, is usually taken to show that Crete was now excluded from her old markets in the Levant; but specifically Levantine devices like the T-flanged pommel need not have come to Crete at a double remove by way of mainland Greece. The friendly existence side by side of Cretans and mainlanders at Trianda in Rhodes, where L.M. IIIA and L.H. IIIA vases are found together in level IIB, and in some of the earliest graves of the Ialysos cemetery, suggests an alternative and more direct route. The early T-flanged pommels from Ialysos should be remembered in this connexion.[11]

A second bronze knife from tomb I (I. 7), but found this time with the burial in the Side chamber, is a strong, broad-bladed instrument of a common type. The metal handle is rather short and there are two instead of the more usual three rivets; otherwise it is very like knives in the Zafer Papoura cemetery. The slightness of the flanges is characteristic of knives in the Knossos cemeteries.[12] The small broken knife from larnax IV in tomb VI (VI. **5**) is typical of the smaller and lighter knives; it has a very close relative in the complete knife from Isopata 2, with the same almost parallel edges.[13] The arrangement of the rivets suggests a shorter handle.

---

[3] *BSA* xxv (1921–3) 220, fig. 40; *RTs* 103, pl. xxxii; *New Tombs at Dendra* 35, fig. 35, 2, from shaft V.

[4] *Ugaritica* i. 67, 69, fig. 63, U; see also Maxwell-Hyslop, *Iraq* viii (1946), pl. iv, types 31–33.

[5] *New Tombs at Dendra* fig. 35, 1; all the bronzes were in a small pit, shaft V, probably collected from earlier burials in the tomb and not dated by the pottery.

[6] e.g. in the Warrior-grave at Ayios Ioannis, *BSA* 51 (1956) 90, fig. 3, nos. 5 and 6.

[7] Mr. R. W. Hutchinson, to whom I am much obliged for help, suggests in correspondence that while the other tomb furniture from beneath the collapsed roof is probably L.M. IIIA and nearer to 1300 than 1400, the sword may well be the earliest object and not much later than 1400. See further *BSA Suppl.* i (1923) pl. xxv, 1, p. 113.

[8] *Annuario* vi–vii (1923–4) 98–100, fig. 15, no. 18; *ADelt* iii (1917) 80–98, fig. 69: the length is 0·305.

[9] *Ugaritica* i. 65 ff., from 'caveau LVI and LVII'; the 'Hyksos graves' are dated by Schaeffer (p. 65) to the eighteenth to seventeenth centuries, though LXV is 'également des XVII–XVI siècles' (p. 69); caveau LVII, said to be contemporary with LVI, contained derivative M.M. pottery.

[10] *PM* i. 718, fig. 540; see also Hutchinson *Iraq* i. (1934) 163–70.

[11] Furumark, *Op Arch* vi (1950) 179; *Annuario* vi–vii (1923–4) 98, fig. 15, nos. 18, 19.

The iron knife (VII. **12**), with bronze rivets, is more advanced than the others in its shape as well as the material of which it is made. The marked curvature of the back and the differentiation of blade and handle are late features. The latter can be seen on the iron knife with one bronze rivet from Vrokastro, Chamber Tomb V, which was probably a disturbed cremation-grave of sub-Minoan date.[14] The same features appear on another iron knife from Fortetsa, found in a tomb with late Protogeometric to Orientalizing vases. This had two rivets of iron and a blade nearly as curved as ours. An iron[15] knife with bronze rivets from Perati in Attica should be earlier.

The very long straight-backed bronze knives with parallel or nearly parallel edges and rather long handles may not have survived in the Aegean to the end of IIIB, bronze examples of the shorter more curved type were appearing at much the same time, while the later iron knives are very little different from their modern steel counterparts.

The Razors. Leaf-shaped and single-edged chopper-shaped blades, usually termed razors, were found in three of the Gypsades tombs. The only leaf-shaped two-edged razor (I. **6**) was in tomb I, close to the knife (I. **5**). The early history of these blades has been traced recently.[16] At the same time Mr. Hood summarized the argument in favour of retaining the attribution as razors. This term was also given to allied Egyptian instruments by Petrie.[17] The first identifiable razors of the Aegean appeared in the Mesara 'tholoi' towards the end of the Middle Minoan period, at Mochlos in M.M. III, and Palaikastro in M.M. III/L.M. I, and with a substantial handle in the bronze hoard from the South House at Knossos, dated by Evans L.M. IA.[18]

On the mainland two distinct varieties, tanged and tangless, appear in the Mycenae Shaft-graves and again at Prosymna, where the earliest blades are very like the Shaft-grave ones; while later examples can be seen gradually developing a neck below the rivets. At Prosymna this neck does not appear before L.H. IIIA. The tangless blade from tomb XIII there is closest to ours from Gypsades.[19] The same development can be followed at other mainland sites and on the rather smaller razors of Ialysos in Rhodes. The tanged type of Shaft-grave razor also reappears at Prosymna.[20] The razors of Crete may have the neck a little earlier than the mainland ones. Those from the Knossos cemeteries are all necked, including that from tomb III of the New Hospital site, 'with mature L.M. II vases', and in the second Warrior Grave at Ayios Ioannis.[21] In the Zafer Papoura cemetery they tend to have a short tang, and are less like the Gypsades blade than these.[22]

---

[12] *PT* fig. 113, particularly 75*d*; see also Mavrospelio, *BSA* xxviii (1926–7) 243–76, fig. 6, no. 4 from T. III.

[13] *TDA* fig. 54, 2*d*.

[14] Hall, *Vrokastro* 151, pl. xxi A; Desborough, *Protogeometric Pottery* 262–3.

[15] Brock, *Fortetsa* pl. 172, 159 from Rho, found on the floor of the tomb under a later Orientalizing pithos. A list of iron knives of Protogeometric date is given by Desborough, *Protogeometric Pottery* 311. Perati is a recent find and the knife was with a dagger of a well-known Mycenaean type (*To Ergon* (1955) 25–30). I am indebted to Miss D. Gray for knowledge of this grave and to Mr. Jakovides.

[16] Hood, *BSA* 51 (1956) 96–97.

[17] Petrie, *Tools and Weapons* pl. lvi, 21, 22.

[18] *BSA* 51 (1956) 96–97 with references; see also *BSA Suppl.* i (1923) pl. xxiv, 1–0.

[19] e.g. *Schachtgräber* pl. lxxii, 224, from II with straight top and three rivets, and pl. xcix, 482, from IV with tang and 3–4 rivets. Cf. *Prosymna* fig. 214 from T. xxvi, L.H. I, like the shaft-graves, and figs. 299 and 503 from T. XXXVII and T. XIII, L.H. IIIA; the last is most like Gypsades (I. 5).

[20] *Prosymna* fig. 487, T. XLIII.

[21] *BSA* xlvii (1952) 271, iii. 15, and *BSA* 51 (1956) fig. 4, 15 with two rivets.

[22] e.g. *PT* fig. 78 from tomb 64, and (p. 117) by impli-

The ordinary Aegean leaf razor may have had a twofold origin. On the one hand, there are the Middle Minoan blades in a variety of shapes and all having in common the thinness of the blade and a rather inadequate system of rivets at the point of union with the handle; and on the other, the fine Egyptian razors of XII dynasty date like the gold-handled ones from Lahun and others from Dahshur. [23] Although symmetrical in profile and comparable in size as well as shape to Aegean leaf razors, particularly to some from Palaikastro, Mochlos, and the Mycenae Shaft-graves, these Egyptian razors were usually sharpened on one edge only, a usage not adopted in the Aegean till later and then on a rather different shape.

Leaf and one-edged razors are seldom found together in tombs in association with *the same burial*, though this does seem to be the case with Zafer Papoura tomb 4. The reason is probably one of date, and of the one instrument superseding the other. The leaf razor does not appear to survive L.M. and L.H. IIIA and our I. **6** may be one of the latest of its kind, from a time when one-edged razors were becoming popular.

A fragment of thin bronze (VI. **6**) found with a small knife (VI. **5**) in larnax IV of tomb VI may possibly come from another leaf razor.

Razors with a single cutting edge were found in tombs I, V, and X. Those from I and X (I. **8**, X. **4**) were very alike, but V. **1** from tomb V was a different type. The two main types were distinguished by Evans at Zafer Papoura and can be recognized also at Prosymna, Ialysos, and on other sites. One is a broad instrument, usually with a straight back, straight base, and only slightly curved cutting edge; it is the type called 'triangular' by Evans. To this belong our razors I. **8** and X. **4**. The other type is slenderer and more curved; there are a number of variants, some with a straight tang and deep concave back, or with a convex-concave curvature. The razor V. **1** has rather less than the usual curvature. One of the broad triangular razors from Zafer Papoura has fine grooved decoration like I. **8** and X. **4**.[24] It is carried out in the same technique as was employed on one-edged knives and some daggers. A ridge in the metal is outlined by corresponding narrow grooves, probably obtained in the casting. The same decoration is found at Prosymna and Dendra.[25]

These razors are often found in pairs. At Prosymna they did not appear till towards the end of L.H. IIIA, and are probably no earlier at Zafer Papoura, or in the Dodecanese.[26] They remained in use throughout L.H. IIIB and perhaps into IIIC. The manner in which one-edged razors supersede leaf, late in L.M. and L.H. IIIA, suggests strongly that both had the same function, even if it was not that of shaving the lip. Evans thought the one-edged variety could be taken back to XVIII dynasty Egyptian originals;[27] or an independent development is also possible from the XII dynasty razor which has already been referred to as possibly influencing the Aegean leaf type.

The Pins. Pins of bronze, bone, and ivory are far from rare in the Bronze Age of the Aegean; but while the crystal and gold embellished pins of the Mycenae Shaft-graves are almost unique for size and grandeur, the majority of the later finds are of a simplicity which amounts to insignificance and which explains the slight degree of attention they have received.[28] One of the most usual is a plain rod of bronze or ivory with a simple ribbing or moulding at the head.[29]

---

cation some of the others also. The tangless razor from the later deposit in the Temple Tomb has a very marked neck, *PM* iv. 1003, fig. 954, *c*.

[23] Brunton, *Lahun* i. 25–26, 37, pl. x; Petrie, *Tools and Weapons* pl. lxi, 21, 22.

[24] *PT* 87, fig. 98 (triangular), while fig. 63 from tomb 42 is the slender type.

[25] *Prosymna* fig. 309 from T XXXVIII, L.H. IIIA/B; *R.Ts.* Ch. T. 2, pl. xxxiii, 6, L.H. IIIB.

[26] *Prosymna* 347, 'cleavers'; *Ann.* vi–vii (1923–4) fig. 15, 21.

[27] Presumably like Petrie *Tools and Weapons* pl. lx, 25–26; see *PT* 117.

[28] Jacobsthal in his *Greek Pins* 1, n. 1, is rather too sweeping when he deduces a pinless 400 years. Some apparently very simple rod-like pins may have been embellished with heads of faience or semi-precious stone as in Cyprus and the Levant.

[29] Already in Shaft-grave V, *Schachtgräber* pl. lxxi, 898, and *Prosymna* tomb XVII, fig. 107, 4, 5, LH. I–II.

The pins from tomb VII are unusual because of the length of one (0·26), the uniform decoration of three of them (VII. **15**, though very corroded, appears to be a miniature version of VII. **13**), and the tapering-off of the moulded head, without disk, globe, or other enlargement. The ornamentation is in the form of an elongated globe-like swelling in the upper part of the shank with zones of simple moulding above and below it. The fourth pin, VII. **16**, is unornamented and stands apart. There is only one small group of published Aegean pins which suggests itself for comparison. It includes the pin from Boubousti in Macedonia and one from Mouliana, tomb A, in East Crete; for both Jacobsthal dismisses the likelihood of a pre-Geometric date.[30] He also rightly rejects comparisons with pins of smooth shank, and globe, and distinct conical head like the Protogeometric pins from Pherae and Vrokastro, chamber tomb III.[31] There is another pin from Vrokastro, illustrated without locality by Hall and so not datable, which is much closer to the Gypsades pins. The ribbing of the shank is not continuous above the globe, but there is the same taper-off towards an unemphasized head.[32]

On the Boubousti and Mouliana pins the shank swelling is biconical rather than globular. Boubousti has a square shank below the swelling and Jacobsthal therefore considers it probably Geometric; but Mouliana has a round shank section throughout and continuous moulding above the swelling and so is closer to the Gypsades pins than is the other. Recent discussions of tomb A at Mouliana have made plain the need to judge each of the metal objects on its merits and allot it to the earlier (L.M. IIIB), or later (Geometric) burial, on style and appearance alone. If early, the pin would have accompanied the two swords; if late, the fibulae and bull-head handles.[33] If the analogy of the Macedonian pin attracts it to the later burial, the Gypsades pins may seem to draw it towards the earlier. It is possible, however, that neither the Boubousti nor the Mouliana pin is now complete, while the addition of a second globe above the moulding would change them into the appearance of a seventh-century pin from Aphaia, Aegina. Pins from Early Iron Age Karphi have the same length and elongated swelling as ours, but are without any shank moulding.[34]

In view of these uncertainties it is particularly gratifying to be able to point to a pin from a dated context which is very much closer in appearance to our pins than those referred to so far. It was found by M. J. Deshayes when excavating Mycenaean tombs at Argos. While this is slenderer than all except VII. **15** and appears to be of more finished workmanship, it has the same attenuated globular swelling, the same or a more pronounced taper, and a round shank-section. The date of the tomb, L.H. IIIC, is given by a stirrup vase, while a second pin of much the same form and date was found in another tomb at Argos.[35]

Since there can be little doubt that this is a Bronze Age pin type, even though of the ultimate phase of that Age, it is possible to see in the pins with *biconical* swelling like Mouliana and Boubousti a later development of the same principle, which was subsequently much elaborated by a multiplication of globes and the addition of various heads, some simple, some elaborate.[36]

---

[30] Heurtley, *Prehistoric Macedonia* fig. 104, *z*: Xanthoudides, *AE* 1904, fig. 7, p. 31. Cf. Jacobsthal, *Greek Pins* 1–3, 16.

[31] Hall, *Vrokastro* fig. 85; *Greek Pins* 2, n. 3, 16.

[32] Hall, *Vrokastro* fig. 58 A.

[33] Desborough, *Protogeometric Pottery* 269–70 (I am indebted to Mr. Desborough for helpful suggestions connected with pins); see also Catling, *PPS* xxii (1956) 113–14. The illustration of the Mouliana pin in *AE* 1904 is not very clear, but I have been able to examine it in the museum at Herakleion and confirm the shape of the swelling. It was not possible, however, to be certain whether the pin was broken at the top.

[34] *Greek Pins* fig. 421, *b*; Ta Mnemata, tombs 1 and 9, *BSA* xxxviii (1937–8) pl. xxviii, 1 and 3, pp. 101, 106, 115; the longest pin from M. 9, no. 378, is 0·254, and the next 0·186.

[35] I am deeply indebted to M. Deshayes for generously letting me see and refer to the pins, and for information as to date and circumstances of finding.

[36] *Greek Pins*, figs. 55*a*, 57, 58, &c., referred to as 'a Cretan type'; see also *Ann.* x–xii (1927–29) from Arkades, pl. vii. The pin found above tomb R is 0·186; it is unmoulded, but otherwise not unlike the Gypsades pins, though still closer to those from Karphi (*Greek Pins*, 203).

The immediate antecedents of our pins are more elusive. The two most likely alternatives seem to be a bronze version of the small ubiquitous ribbed pins of bone and ivory,[37] or adoption from a source outside the Aegean. The rich series of west and central European pins are separated by too great an interval to be relevant, but there is an Asiatic pin which, though usually short and rather stouter, has the same globular swelling enclosed between ribbed zones. A partially published pin from Byblos tapers and is slender, while a stouter copper pin from Chagar Bazaar has swelling and moulding but a square shank section below, like the Boubousti pin.[38] Mallowan, publishing the pin, gives the date as *c.* 1600 B.C., and in his discussion he refers to possible relatives in the Lenkoran region of the Caucasus at about 1400 B.C., as well as to earlier ones from Chagar Bazaar itself and Tepe Gawra.[39] Owing to this sparse and rather scattered distribution (there appear to be none from Babylonia and Persia and it is quite unlike the huge series of Levantine toggle-pins) he suggests that it may be a variety of guild pin, the product of a small group of craftsmen who passed their traditions on from generation to generation. If this were so and these pins actually related to the few Aegean Bronze Age examples, the stages by which they reached Crete and the Argolid remain obscure. The Byblos finds may eventually throw some light on this problem.

The remaining 'pin' VII. **16**, if such it is, from tomb VII, is of very uncertain character. It is probably incomplete, but the S-bend near the present top seems to have been in the original design. A 'bronze implement' from Karphi may have had the same form.[40] But we may even have part of a two-shank pin like the much later northern variety. It is, however, longer than these and remains without any obvious parallel.[41]

NANCY SANDARS

THE AMBER BEADS (II. **6**, VII. **23**)

It has long been axiomatic that amber is seldom found in Crete, and it is therefore of some interest to be able to record amber beads in two of the Gypsades tombs, Nos. II and VII. In Mycenaean sites on the mainland of Greece amber beads of different shapes are found in great numbers and so frequently as to appear a fairly constant feature of these sites; certainly as much as faience and rather more so than lapis lazuli, an exotic from Asia.

In the shaft-graves of both the new and old grave circles at Mycenae amber is plentiful and thereafter at Prosymna in graves dating from Late Helladic I to Late Helladic III;[42] and this is characteristic of all the principal sites, though the number of beads found may be much smaller. Amber is also particularly plentiful on the west coast of the Peloponnese: at Kakovatos in Elis, in tholos A (dated L.H. IIA); at Epano Englianos in western Messenia, in the tholos excavated by Lord William Taylour, close to the palace, and dated to the fifteenth century or earlier, in which about 360 beads were recovered;[42a] and in the second tholos recently excavated by Professor Marinatos at Myrsinochorion in the same area.[43] Farther north there was much in the Ionian Islands, particularly in Cephalonia; and a little has been found in Epirus.[44] It reached the islands of the Aegean, the Dodecanese,[45] and even the Levant, where it is reported from Ras Shamra (in contact with Mycenaean objects) and at Atchana in a grave, apparently a cremation, dated to some time after the sea-raids.[46]

---

[37] There are some with moulding and some with globe; I know of none that combine both.

[38] Dunand, *Fouilles de Byblos*, Atlas II, pl. clxxx, 17026; Mallowan, *Iraq* ix (1947) 188, no. 6, E 28, pl. xli, 6, from the late phase of level I.

[39] J. de Morgan, *Préhistoire orientale* iii. 213, fig. 212, from Veri, date 'Bronze III'; Speiser, *Tepe Gawra* pl. L, 11.

[40] *BSA* xxxviii (1937–8) pl. xxviii, 1 from M. 8, no 166, and p. 104.

[41] *Greek Pins* figs. 402–3.

[42] *Prosymna* 286, L.H. I, T. XLIV; L.H. II, T. II and III; L.H. III, T. VI, XLI–XLIII, LI.

[42a] *AM* xxxiv (1909) 278; *AJA* 58 (1954) 30–32. I am indebted to Lord William Taylour for information on the probable date of the amber in the tholos.

[43] *Antiquity* xxxi (1957) 97–100.

[44] Marinatos, *AE* 1933, 92–93; Kalbaki in Epirus, shown to me by Mr. S. Dakaris, to whose kindness for information I am most grateful.

In comparison with this wide dispersion of what must have been a fairly plentiful, even if highly prized commodity, the verified amber finds from Crete are indeed few and meagre. There is the well-known disk and beads from the Tomb of the Double Axes (Isopata 2) dated to the beginning of L.M. IIIA, and some small beads from a tomb at Arvi near Amira in south-eastern Crete.[47] The beads, of various materials besides amber, were found together with fragments of a bronze sword, the whole evidently salvaged from a tomb whose date was judged by Evans (cautiously and on the evidence of the sword only) as probably L.M. I or II. The sword has not survived, but some of the beads are in the Ashmolean Museum at Oxford. The two Gypsades beads II. **6** and VII. **23** make the third Bronze Age find from Crete. They are smaller than those from Isopata, but with thread-holes of approximately the same size. Some of those from Arvi are barrel-shaped, but others are more like the Gypsades ones.

From time to time samples of amber from various sites have been subjected to chemical analysis in order to discover the source of the raw material. In the case of Isopata and Ras Shamra the results were not conclusive, but pointed to a strong probability that the source was the Baltic shore of northern Europe.[48] In a further attempt to clarify this issue, the beads from Arvi were sent recently to the Research Laboratory of the British Museum for microchemical analysis. In view of the superficial similarity of these to the Gypsades beads, and the rarity of Cretan amber finds, it may not be inappropriate to include the results of this analysis in the present discussion. With the Arvi beads were sent specimens from the Epano Englianos tholos tomb, a bead of uncertain provenance labelled 'Thisbe' in the Ashmolean, others from Kato Phana in Chios, from Vardari, Salonica, and one from Capua (probably Etruscan).[49]

Dr. Werner's report on the beads will be found in the Appendix, pp. 261 f. From this it will be seen that, while certain reservations are necessary particularly in the case of the smaller samples, a good positive result was obtained foı the beads from Epano Englianos and that with the 'Thisbe' label; while for the Arvi bead and one from Kato Phana the positive result though slight was sufficient to make a Baltic origin appear most likely, some succinic acid being detected on heating in all of them.

Apart from the Bronze Age beads from Epano Englianos and Arvi, the other beads, where datable, are considerably later. That from Salonica may be Roman. At Kato Phana in Chios the amber was found in Geometric and Archaic deposits (in the latter there were still Geometric types of fibula, so the amber might also be a survival from earlier times).[50] Unlike Bronze Age amber, most of which was strung together as beads and spacers in single or multiple necklaces, this was shaped into pin-heads or components of fibulae or as settings within other materials. Miss Lamb draws attention to the close similarity there is to some of the richer range of shapes found in the Artemision at Ephesus, most of which are dated to the seventh century.[51] Hogarth drew a distinction between a 'red' and a 'tawny' amber and supposed the former to be probably Sicilian; but analyses have shown that visual criteria are of no avail when deciding this question of provenance. Some of the Ephesian amber was shaped to embellish fibulae, some for the heads of pins, their shape the counterpart of the Greek Orientalizing pin; of special interest are large rectangular flattened spacer-beads with up to five bored thread-holes. In the case of the largest, a simple straight boring seems to be meant,[52] but a rather smaller bead had one vertical and three horizontal borings, which invite comparison with the well-known spacer-beads from Mycenae and Kakovatos. There is also a small amber disk within a circular frame like the much larger disk from Isopata.[53]

---

[45] *BCH* lxxi–ii (1947–8) 220, pl. xxxviii, 11, 12, Delos from the Artemision. Zervos, *Rhodes, Capitale du Dodécanèse*, figs. 156, 160, 162.

[46] *Ugaritica* i. 100, fig 95, several beads published by Schaeffer; Woolley, *Atchana* 203, At/37/33.

[47] *TDA*, 42–43; *PM* ii. 2, 174, n. 2.

[48] *TDA*, 43; *Ugaritica* i. 100, n. 2.

[49] I am most grateful to the following for the loan of beads: to Prof. Blegen and Lord William Taylour for sample 1, to Dr. Makaronas, then director of the Archaeological Museum in Salonica, for sample 3, and to the Keeper of the Department of Antiquities, Ashmolean Museum, Oxford, for other samples; also to Dr. Werner and the British Museum Research Laboratory for performing the analysis and reporting upon it.

[50] *BSA* xxxv (1934–5) 154–5, fig. 11.

[51] Hogarth, *B.M. Excavations at Ephesus: The Archaic Artemision* 213–16; see also Jacobsthal, *Greek Pins* 33–37.

The chronological interval between the Orientalizing jewellery of Ephesus, Geometric Chios, and Bronze Age tombs of the Aegean may seem too great for them to have any bearing upon each other. It is sometimes thought that the importation of foreign amber, whatever its ultimate source, ceased with the break-up of the Mycenaean hegemony. This may be an over-statement. Quite large quantities were reaching the Ionian Islands in the ultimate Bronze Age; the beads in tombs at Metaxata in Cephalonia were certainly crude, roughly shaped into barrels or sub-rectangular spacers,[54] but they were plentiful. Much was also found in Ithaca, though in too poor a condition for preservation.[55] The Atchana pendant, described as 'an amber ball bound with gold', was found with a scarab of Ramses VI, so is not earlier than the second half of the twelfth century, and is later than the sea-raids;[56] while on the other side amber has been found in seventh-century contexts in Crete, in the Khaniale Tekke tholos, Knossos, and possibly at Arkades.[56] The chronological gap, though not bridged, may be narrowed. Amber with its mysterious qualities would have been long treasured and often re-used like Oriental and Egyptian seals; even so one can only point out the existence of survivals or coincidences without explaining them. So too Jacobsthal, describing the pins of Ephesus, in order to find comparisons for some of the most elegant work found it necessary to call in the Minoan–Mycenaean world.[57]

The route employed in the amber traffic during the Bronze Age is well marked by the scatter of finds in the Ionian Islands and Epirus leading up the Adriatic to the Alpine passes and the north, and marking perhaps tolls or stages on the journey from source to market. There is ample evidence from north of the Alps for the continuation of this route.[58] It is possible that later, during the European Iron Age, one more easterly from the Baltic to the Black Sea was also used, but until more is known, and particularly from Macedonia, the Troad, and the Black Sea itself, it is best to look first of all to the Adriatic. It would be of much interest if that route could be shown beyond doubt to have been operated in the seventh century.

Dr. Werner's report makes clear the necessity in every case of examining microchemically every specimen before pronouncing upon its probable source. In view, however, of the evidence from Isopata and Arvi, it would seem to be a fair guess that the material of the Gypsades beads came like theirs from the Baltic, while the result obtained for Kato Phana suggests that the same may be true of Ephesian amber. A necessary caution is provided by the odd behaviour and negative results obtained from analysis of the single example of Italian (Etruscan?) amber and the inconclusive result obtained for the Vardari (Roman?) bead.

NANCY SANDARS

---

[52] Hogarth, *Ephesus* 215, pl. xlvii, 28; the measurements are 0·040 by 0·015.

[53] Hogarth, *Ephesus* pl. xlviii, 2; cf. *TDA* fig. 56.

[54] Marinatos, *AE* 1933, 92–93, fig. 43 and pl. 2; further information kindly given by Miss S. Benton.

[55] Woolley, *Atchana* 203. Supposed 'amber' from the British Museum excavations at Enkomi in Cyprus was found not to be a resin.

[56] *BSA* xlix (1954) 217, 226 (see particularly pl. 28, 5): pendants from the large ornament and an amber spacer with simple boring re-used as a pendant in a rectangular gold setting. I am indebted to Dr. N. Platon for assistance in re-examining this interesting ornament. Arkades, *Ann.* x–xii (1927–9) 477.

[57] Jacobsthal, *Greek Pins* 33–37; as well as the gold 'flower pins' cited by Jacobsthal, the crystal pin-head, Hogarth, *Ephesus* pl. xlvi, 29 is more like Mycenaean shaft-grave pins than any other, e.g. *Schachtgräber* pl. xxxi, 103, and Mylonas, *Ancient Mycenae* fig. 57.

[58] De Navarro in *Geographical Journal* 66 (1925) 481–507; see also J. G. D. Clark, *Prehistoric Europe* 261–4, and Sandars, *Bronze Age Cultures in France* 72–77.

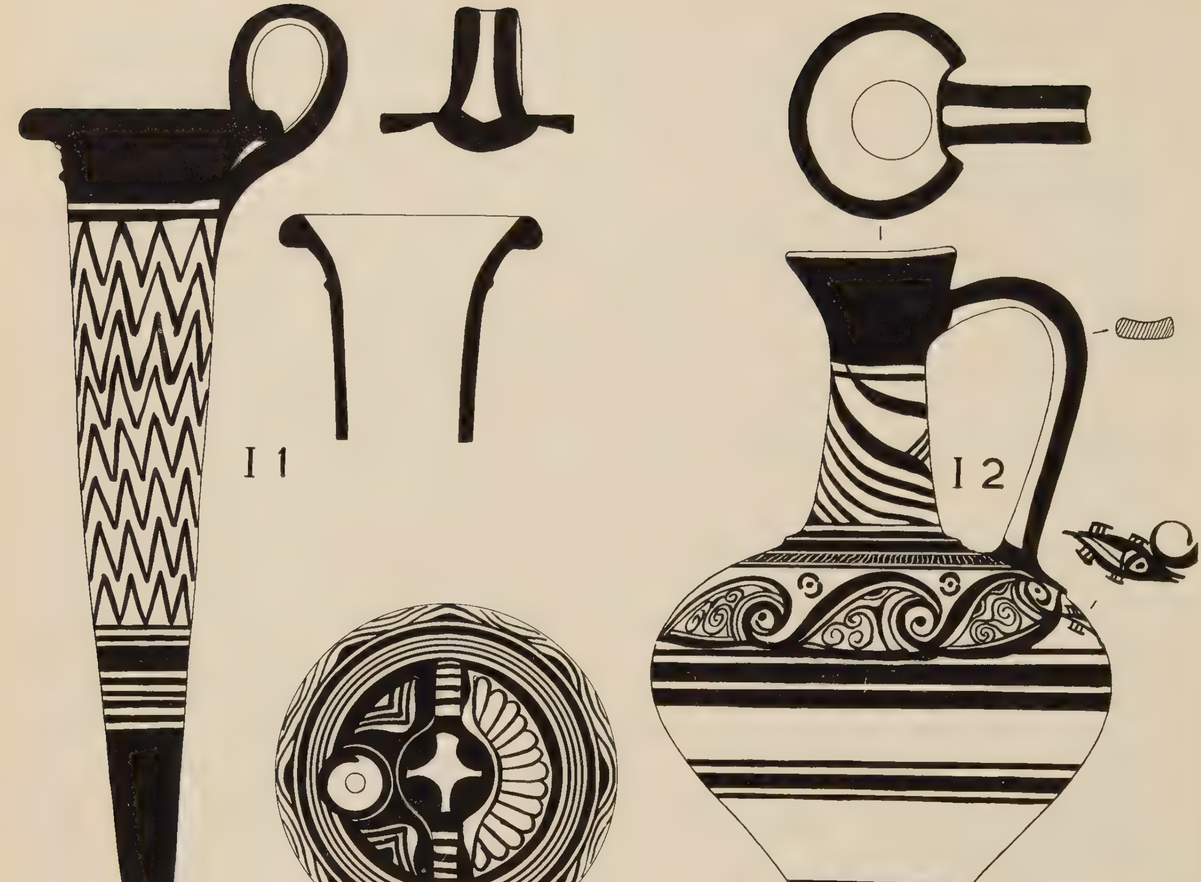

I 1
I 2
I 4
II 1
I 3

Fig. 26. Vases, Tombs I, II (1:3)

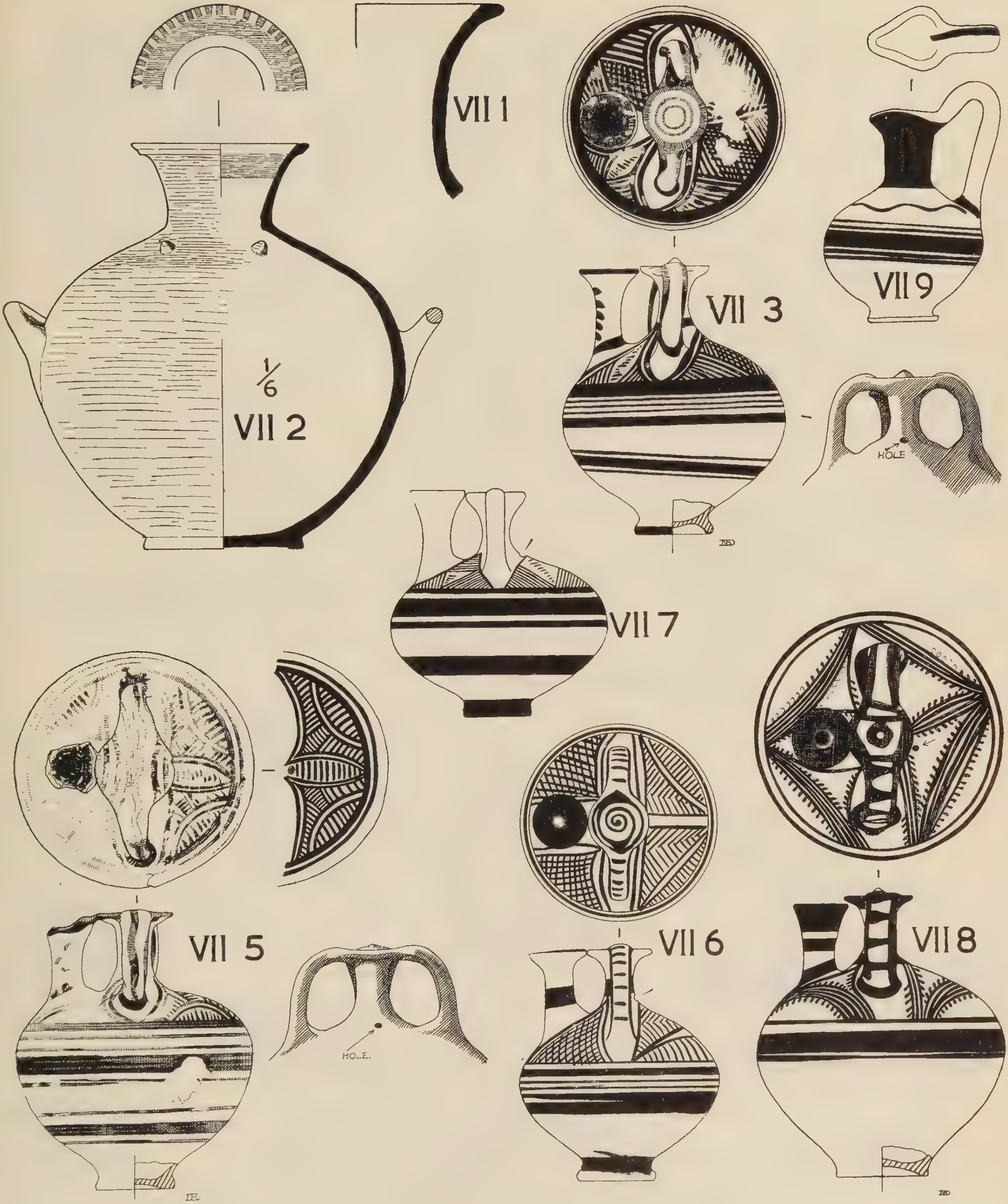

VII 1
VII 2
1/6
VII 3
VII 9
HOLE
VII 7
VII 5
HOLE
VII 6
VII 8

Fig. 27. Vases, Tomb VII (1:3 unless otherwise stated)

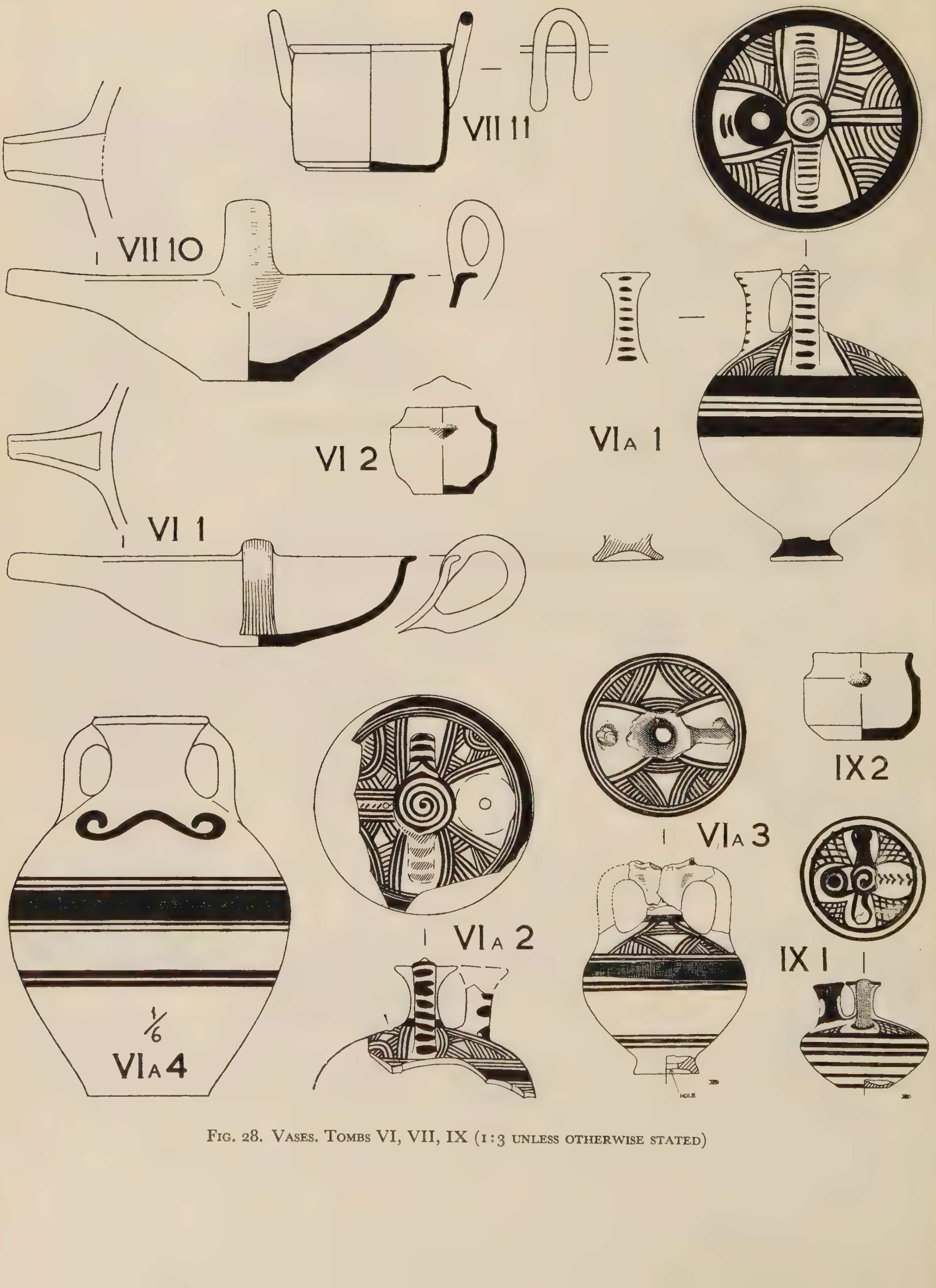

VII 11
VII 10
VI 2
VI 1
VIA 1
VIA 4
1/6
VIA 2
VIA 3
HOLE
IX 2
IX 1

FIG. 28. VASES. TOMBS VI, VII, IX (1:3 UNLESS OTHERWISE STATED)

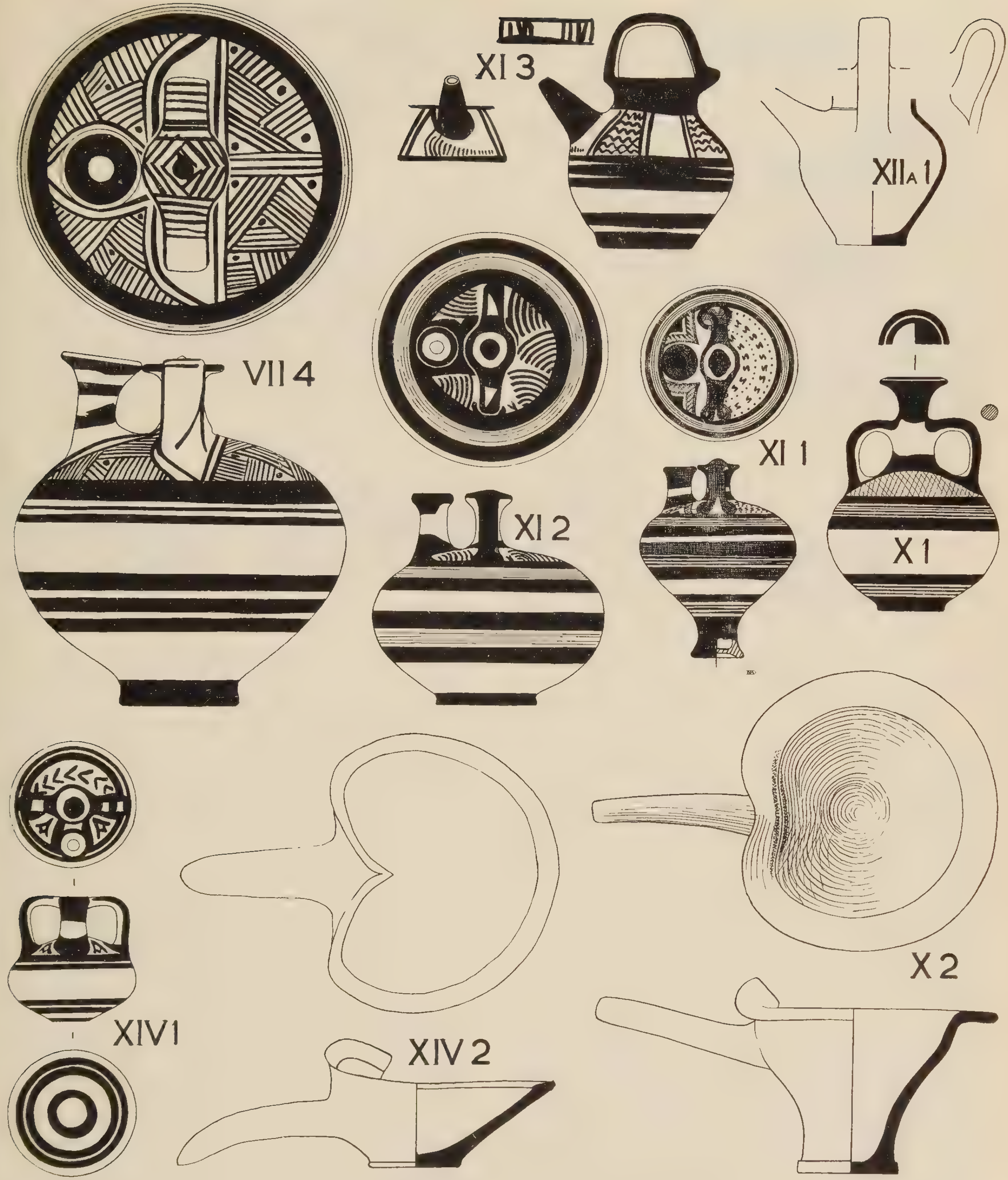

XI 3
XIIA 1
VII 4
XI 1
XI 2
X 1
X 2
XIV 1
XIV 2

FIG. 29. VASES. TOMBS VII, X, XI, XIIA, XIV (1:3)

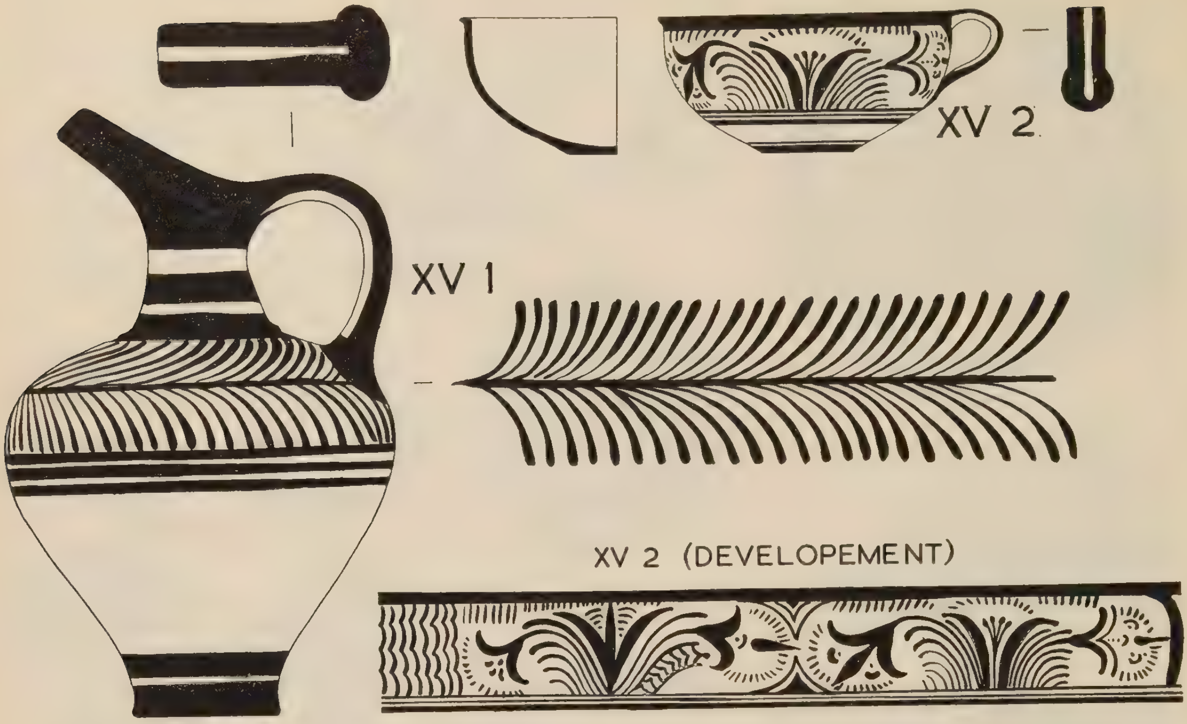


Fig. 30. Vases. Tomb XV (1:3)

Inventory of the Vases and other Objects from the Cemetery

I. **1.** Rhyton (fig. 26, plate 54*c*). Ht. 0·364. Ht. incl. handle 0·405. Diam. at tip 0·104. Diam. of spout 0·02. Broken but complete; the paint is slightly worn and the rim chipped. The painting is in orange and brown, with linear decoration on the lower part of the cone and interlocking zigzags above. The lip and the outer edges of the handle are outlined. The handle is of the raised metallic type and the lip overhangs slightly; the tip of the spout is offset a little to the rear. The buff clay without slip forms the ground for the decoration.

The shape of the vase corresponds with Furumark's Type 199 (*MP* 71–72). The rhyton may be compared with the example from Palaikastro (*Palaikastro* 104 fig. 87*a*) and belongs to the L.M. IIIA 1 phase. For the zigzags cf. *MP* 182.

I. **2.** Piriform Jug (fig. 26, plate 54*a, d*). Ht. 0·29. Max. diam. 0·18. Diam. of base 0·06. Broken but complete, with well preserved black and brown decoration. The base is splaying and flat. A repeated S-pattern is incised at the base of the neck moulding. The lip is cut away above the handle. Argonauts are arranged in series around the shoulder, and a fish has been painted below the base of the handle. Bands around the neck join to form a chevron at the front. The edges of the handle are outlined. The argonaut is a development of the L.M. IA type and lacks tentacles.

The fish illustrated in *BSA* viii, pl. xix is similar to the creature on this vase, and Furumark's Motive 20 (*MP* 302) may be compared with it. The shape of the vase from Artsa (*AE* 1904, 18, fig. 2) is the same. The quality of the potting and of the decoration is very fine indeed, while the decoration suggests that the vase belongs to the LM. IIIA period, and probably to the beginning of it, but a precise chronological placing is impossible.

I. **3.** Shallow Cup (fig. 26, plate 55a–b). Ht. 0·04. Diam. 0·129. Diam. of base 0·038. Rim slightly chipped. Flat base, but the interior bottom of the cup rises somewhat. The decoration is orange on a light-brown ground. On the sides horizontal linear bands enclose a form of papyrus derivative. Concentric circles decorate the bottom of the cup inside.

In shape the cup illustrated in *AE* 1904, 18, fig. 2 is similar. The Mycenaean examples of this type of vase are not noticeably different in design, and the cups assigned by Furumark to his Type 220 may be compared with the Cretan ones. Shallow cups of this type are found all over the Mycenaean world, and have a chronological range throughout L.H. IIIA 2 to L.H. IIIB. The papyrus motive is common in Crete (cf. *MP* 185 Motive 11). Our example belongs to the L.M. IIIA period, and probably to the end of it. Thus the cup appears to be slightly later typologically than the rhyton and the piriform jug in the same tomb.

I. **4.** Stirrup Jar (FIG. 26, PLATE 54*b*). Ht. 0·177. Diam. 0·136. Diam. of base 0·052. Complete, but the surface is chipped. The orange-brown paint is slightly faded. The body is decorated with horizontal linear bands and stemmed spirals, and there are pendant loops on the upper body surface. The clay is light brown and rather gritty, with traces of a slip. A cross has been left in the slip on the top of the false neck (cf. *PM* iv. 301).

The stirrup jar is similar in shape to the vase illustrated in *PT* 67, fig. 73, and may be assigned to L.M. IIIA 1. The spirals are similar to those in *MP* Motive 46, p. 353 fig. 59, but the arrangement of standing spirals with rosette centres on our vase appears to be unique, and may be derived from a fresco prototype. Piriform vases of this type and date were popular at Knossos (cf. *PT* 120, fig. 114).

I. **5.** One-edged knife (FIG. 32, PLATE 59*b*). Bronze. L. 0·34. Max. W. of blade 0·022. W. of pommel 0·033. Back of flange max. 8 mm. L. of rivets 0·020, 0·017, 0·015. Fairly good condition, apart from the tip of the blade. Fragments of the wooden panels that completed the handle survive. The back of the blade and handle form a nearly straight, continuous line. Two decorative ridges outlined by corresponding grooves run the length of the blade just below the back. Near the point they disappear in surface corrosion. This form of decoration is characteristic of a number of knives and razors. The handle or hilt has three rivet-holes unequally spaced, with rivets in place; also there are six bronze studs with disk head and bent pin, the function of which must have been ornamental, as there are no holes in the metal to take them nor are they long enough for use. It is possible that the wood of the handle was covered with a coat or veneer of finer material and that the studs held this in place; but if so, it has not survived. Deep flanges held the wooden panels in place and are continued round a T-shaped projection which shows what was the original shape of the pommel. With burial in main chamber.

I. **6.** Two-edged leaf razor (FIG. 33, PLATE 59*b*). Bronze. L. 0·195. Max. W. 0·055. W. of haft 0·04. L. of rivets 8–9 mm. The tip is missing, and if complete the length would have been approximately 0·20; a portion of broken blade survives. The metal is extremely thin and severely corroded, particularly at the sides. There is a slight constriction or neck, and above this three rivet-holes with rivets in place and fragments of wooden handle still adhering. There is no metal tang, but two additional rivets were found which must have secured a split-wood or two-piece handle. With burial in main chamber.

I. **7.** One-edged knife (FIG. 32, PLATE 59*b*). Bronze. L. 0·273, (blade 0·20, handle 0·073). Max. W. of blade 0·027. W. of handle 0·023. L. of rivets 0·015. Back of blade 3 mm. thick. The blade is complete, apart from some corrosion and fraying of the lower edge. Minute fragments of the wooden handle survive. The back of the blade and handle form a continuous almost straight line. The surface is badly worn, but there are faint indications of a single decorative groove running the length of the blade. There are two rivet-holes with rivets in place, and a slight thickening of both edges of the handle, although hardly sufficient to be reckoned as flanges. The wooden handle must have extended beyond the metal, which is scarcely long enough to afford a satisfactory grip. With burial in side chamber.

I. **8.** One-edged razor (FIG. 33, PLATE 59*b*). Bronze. L. 0·19. Max. W. 0·079. L. of tang. 0·05. Back of blade 4 mm. L. of rivets 0·011. Moderate condition; part of the lower edge is frayed and worn. The back is straight with a slightly drooping handle, the lower (cutting) edge is also nearly straight up to the handle, giving a characteristic triangular profile. Two decorative ridges outlined by corresponding grooves run the length of the blade immediately below the back, also marked by a ridge. The three rivets are in place, the tang is flat, without flanges, some fragments of wood adhere close to the rivets. With burial in side chamber.

II. **1.** Spouted Juglet (FIG. 26, PLATE 55*e*). Ht. 0·09. Max. diam. 0·08. Diam. of base 0·04. Part of the base is missing, the sides are chipped, and the spout broken. The paint is dark brown on a yellow ground. The upper body has a linear decoration with pendent loops, and there are vertical stripes running parallel round the base of the neck. The top of the handle and the neck are painted solid. The clay is well refined. The body has an appearance of bagginess.

This type of vase is common in Crete in both LM. IIIA and B 1. Compare the vase from Knossos (*PT* 123, fig. 117, no. 76*g* of LM. IIIA 2 date (Furumark), and the much later vase from Mirabello in *Mirabello* 54, no. 0.73, pl. xxxviii). The vase from Phaistos (*MA* xiv (1904) 687, fig. 5), also of L.M. IIIA date (Furumark), is similar. The shoulder decoration is a version of the tricurved arch pattern (*MP* Motive 62, 7, p. 391, fig. 68), and suggests that the present vase should be dated in the L.M. IIIA 2 period. But a stirrup vase with similar decoration (*PT* 63, fig. 67) is assigned by Furumark to L.M. IIIA 1.

II. **2.** Ribbed beads (two) (FIG. 34, PLATE 59*a*): (1) Dark-blue faience, very good condition. Diam. 0·02. Ht. 0·01. Beside vase II. **1.** (2) Soft whitish faience, damaged and surface much worn. Diam. *c.* 0·016. Ht. 9 mm. Under vase II. **1.**

Beads of this type are found throughout the Aegean in the Late Bronze Age. e.g. (1) *Crete*: Knossos (*PT* 72, fig. 81*a*: T 66*c*); Karteros (*ADelt* 11, pl. 2, 23). (2) *Mainland*: Mycenae—very many found by Tsountas in National Museum, Athens; Dendra (*RTs* 105, fig. 80: tomb 2); Asine 376, fig. 243: tomb I. 1. (3) *Troy*: Dörpfeld, *Troja und Ilion* 398, fig. 387*b*: Troy VI).

II. **3.** Bead, probably flattened globular (FIG. 34, PLATE 59*a*). The material seems to be lead, much corroded. Diam. *c.* 0·016. Ht. *c.* 0·01. Beside vase II. **1.**

II. **4.** Sealstone, amygdaloid with fluted back (HM 1736) (PLATES 62–3). Black haematite, worn. L. 0·016. W. 0·01. Diam. of string-hole just over 1 mm. Finely engraved with a butterfly. Beside skull.

L.M. I or even M.M. IIIB (Kenna). Cf. Ashmolean Museum 1938. 968, 1941. 1229; Cabinet des Médailles No. 4856; HM 1276 (which is L.M. II).

II. **5.** Sealstone, amygdaloid with fluted back (HM 1735) (PLATES 62–63). Carnelian flecked with black. Signs of wear and slight damage round the string-hole at both ends. L. 0·016. W. 0·013. Diam. of string-hole at one end 2 mm., at the other 1·5 mm. Engraved with a stylized papyrus design. Found beside the skull with the beads II. **6–10.**

L.M. I (Kenna). 'Technique and style of the Talismanic Style of that period.' Cf. HM 217, 884.

II. **6.** Bead (FIG. 34, PLATE 59*a*). Flattened biconical. Diam. 9 mm. Ht. 6 mm. Diam. of string-hole 2 mm. Amber, slightly abraded, but some of the original surface remains; dark honey-yellow, finely crackled and tending to become granular in texture. Beside skull.

Amber beads of identical shape from Mycenae (*ChTs* 86, fig. 34: tomb 518. L.H. I–II (Wace)).

II. **7.** Bead, probably flattened globular. Bronze, much corroded and split. Diam. *c.* 0·014. Ht. *c.* 0·011. Beside skull.

II. **8.** Bead, flattened globular (FIG. 34, PLATE 59*a*). Orange-veined stone (? agate), slightly damaged. Diam. 0·016. Ht. 0·012. Diam. of string-hole 3 mm. Beside skull.

II. **9.** Bead, biconical (FIG. 34, PLATE 59*a*). Carnelian, worn and slightly damaged, as if long in use. L. 0·01. W. 8 mm. Diam. of string-hole 2 mm. Beside skull.

Identical beads from the shaft-graves (*SG* no. 115, pl. xxv) and later at Mycenae (*ChTs* 60: tomb 515, 44. Cf. *Prosymna* 290, four in all, from tombs iii, viii, xliv).

II. **10.** Bead, barrel-shaped (FIG. 34, PLATE 59*a*). Black steatite. L. 0·014. Diam. 8 mm. Diam. of string-hole, which is rather irregular, *c.* 2 mm. Decorated with two diagonal incised lines. Beside skull.

II. **11.** Fragment of ? pin (FIG. 34). Probably ivory, surface much decayed. L. preserved 0·015. Found among bones in area of chest of skeleton.

III. **1.** Finger ring (FIG. 33, PLATE 60*b*). Bronze, broken but complete. Made from a thin strip with the ends overlapped. Diam. only 0·016. W. 4 mm. Found in sieving, but certainly from burial in chamber.

IV. **1.** Fragments of an ivory comb (FIG. 34, PLATE 60*d*), very shattered and brittle, the largest (L. 0·025) preserving the stump of teeth and traces of horizontal grooves along the handle. Lying with the spindle whorl IV. **2** above traces of a ? wooden box under the larnax.

A number of such ivory combs have been found in Late Bronze Age contexts round the Aegean, many with elaborate carved decoration, but some like ours plain except for horizontal grooves along the handle (e.g. two from Prosymna, and three from Mycenae, see below).

(1) *Crete*: Knossos, Temple Tomb (*PM* iv. 1004, fig. 955); Karteros (*ADelt* 11, 87, fig. 12. pl. 3, 20); Palaikastro (*Palaikastro* 126, fig. 108), and another ? from a tomb (*BSA* viii. 304, no. 9).

(2) *Mainland*: (*a*) Mycenae. One large gold-mounted comb from Shaft-grave IV (*SG* no. 310), and another plain with a long handle at the side from the new Shaft-grave Circle, are the earliest and differ somewhat from the main series. For later examples see *AE* 1888, 138. *ChTs* 84, 105 and 210, three in all. One of these (ibid. 85, fig. 32: tomb 518, assigned to L.H. I–II (Wace)) is simple and undecorated like ours. Several found by Tsountas include Athens Nat. Mus. 2474, 2632, 2701, of which the two latter, from the Acropolis, are also plain and similar to ours. (*b*) Prosymna (*Prosymna* 282). Remains of four in all. Two of these (ibid. pl. 160, 1; tomb xxix, pl. 417, 9: tomb xiv) are plain like ours. (*c*) Spata. One magnificent decorated comb (*BCH* 1878, 217, pl. xvii, 1), together with two smaller ones (Athens Nat. Mus. 2061–3). (*d*) Kakovatos (Tholos A). Two decorated examples, of which one has a side handle (*AM* xxxiv (1909) 286, pl. xii, 1; 285, pl. xii, 2).

(3) *Troy VI* (Dörpfeld, *Troja und Ilion* i. 399, fig. 389), which is decorated.

Several of these, e.g. two from Prosymna and the one from Palaikastro, are made in two pieces joined together. One from Mycenae (*ChTs* 85, fig. 32, and 105, fig. 42) also has a slot for the insertion of an upper part to the handle, but the slot is high in the handle and not just behind the teeth as in the Prosymna and Palaikastro combs.

Evans points out (*PM* iv. 1005 n. 2) that combs of this kind were probably used by men as much as by women. That from the Temple Tomb at Knossos, for instance, was found together with a razor and the bones apparently of a mature man.

IV. **2.** Conical spindle-whorl. Black steatite. Diam. 0·019. Ht. 0·012. With the ivory comb IV. **1** with traces of a ? wooden box under the larnax.

It is thought that these objects were mostly at any rate used as buttons (e.g. *ChronP.* 89, citing Tsountas-Manatt, *Mycenaean Age* 174; Persson in *Bull. Lund* 1924–5, 84; *Zygouries* 208; *ChTs* 217). But when they occur in very large numbers, as in the grave at Mycenae from which Tsountas recovered 160, surely they are best regarded as beads! In our case, however, the association with an ivory comb and a small bronze point among traces of what may have been a woman's work-box suggest that the object was really being used as a spindle-whorl, and was placed in the tomb with that idea in mind. Cf. tomb XI, where another small bronze point was also found together with conical 'spindle-whorls'. Whorls of this and allied types may therefore have been employed for a variety of purposes—as spindle-whorls, buttons, or beads—according to need.

IV. **3.** Small bronze point with oval section (FIG. 33). L. 0·011. Perhaps an awl or some other tool. Found near the ivory comb IV. **1** and spindle-whorl IV. **2** among the remains of a ? wooden box under the larnax. Compare the similar point XI. **4.**

IV. **4.** Finger ring (FIG. 33, PLATE 60*b*). Lifted with a finger bone still in place inside it. From pit below larnax.

IV. **5.** Bead, cylindrical (PLATES 59*a*, 60*d*). White crystal. L. 0·018. Diam. 0·01. Diam. of string-hole 3 mm. From pit below larnax.

One identical from Mycenae (Tsountas: tomb 55) in Athens Nat. Mus.

V. **1.** One-edged razor (FIG. 33, PLATE 58*d*). Bronze. L. 0·167. Max. W. 0·046. L. of tang. 0·04. Back of blade 4 mm. thick. L. of rivets 0·012. Complete apart from a small tear in the lower edge; the metal is very corroded and fragile. The upper line of blade and handle is very slightly concave-convex, while the lower (cutting) edge is concave. There are two rivets in place in the handle, which is very slightly flanged. No sign of decoration has survived, but the condition of the surface is poorer than that of the other one-edged razors from the cemetery.

VI. **1.** Spouted Cup (FIG. 28, PLATE 56*f*). Ht. to lip 0·048. Ht. to top of handle 0·056. Diam. 0·164. Diam. of base 0·042. Broken, but complete except for chips from the rim. The clay is slipped and has a fine brown biscuit. The spout is slightly raised at the tip, and has a bridge at the junction with the body. The shape belongs to the L.M. IIIB 1 period (cf. VII. **10**), and differs from Mycenaean examples in the marked upward sweep of the handle. Cups of this type could have been used as lamps, the wick being held by the bridged spout: but there are no traces of fire on the present vase. One from Gournes (Crete) has a ringed foot (*ADelt* 1918, 67, fig. 11, no. 6).

VI. **2.** Small handleless Jar (FIG. 28, PLATE 56*f*). Ht. 0·045. Diam. of rim 0·035. The pot is unevenly made of hard gritty red clay, and is undecorated. The upper part of the body narrows towards the mouth. Compare IX. **2**, and *PT* fig. 100, no. 99*r*: L.M. IIIB 1 (Furumark).

VI. **3.** Bead, flattened globular (FIG. 35, PLATE 60*b*). Bronze, much corroded. Diam. 0·011. Ht. 0·01. From larnax III.

VI. **4.** Bead, flattened globular (FIG. 35, PLATE 60*b*). Soft black and white mottled steatite. Decayed, and surface frayed on one side. Diam. 0·01. Ht. 9 mm. From larnax III.

VI. **5.** Part of one-edged knife (FIG. 32, PLATE 60*a*). Bronze. Only the haft and a small part of the blade preserved. Rather corroded. L. 0·084. W. 0·017. Two small rivets L. 0·011 and 0·012. There are slight flanges on each side of the handle. A tiny bronze disk (diam. 5 mm.) was found near the knife and may therefore belong to it. From larnax IV.

VI. **6.** Fragment of thin bronze plate (FIG. 33, PLATE 60*a*), possibly from the blade of a leaf-shaped razor, like I. **6.** L. 0·03. W. 0·014. Th. 1 mm. From larnax IV.

VI. **7.** Conical spindle-whorl. Black steatite. Worn, and cone damaged. There are considerable traces of wear round the top and bottom of the string-hole. Diam. 0·017. Ht. 0·012. Found in sieving, but certainly from beneath the blocking wall in the entrance.

VIa. **1.** Stirrup Jar (FIG. 28, PLATE 56*d*). Ht. 0·15. Max. diam. 0·12. Diam. of base 0·04. The rim of the spout is broken and the decoration much worn. There is an air-hole at the bottom of the false neck. The small spreading foot gives an impression of instability. Brown horizontal stripes surround the undersides and the belly. Triangular hatched panels occupy the shoulders. A spiral is drawn on the disk of the false neck. There are horizontal stripes on the outside of the handles and on the front of the neck. The false neck is coned, and the spout is unusually slender.

The shape and the triangular panel decoration place the vase in the L.M. IIIB 2 period, but many of the features survive into Sub-Minoan and Protogeometric. A contemporary vase of this type is *Mirabello* D8, pl. x. Compare the stirrup jar from Karakovilia illustrated by Evans (*PM* ii. 137, fig. 70B, 1). A later example is No. 15 in tomb Π at Fortetsa (Brock, *Fortetsa* 9 and pl. 3).

VIa. **2.** Fragments of a Stirrup Jar (FIG. 28). It has a spiral on the false neck disk. Probable date LM. IIIB 2.

VIa. **3.** Two-handled Jug (Pilgrim Flask) (FIG. 28, PLATE 56*d*). Ht. 0·108. Max. diam. 0·084. Diam. of base 0·034. One handle and the rim of the spout are restored. The surface has flaked badly, and the foot is chipped. Brown bands run around the belly, and there are hatched triangular panels on the shoulder, each with its apex touching the base of the neck. The handles are striped horizontally. A hole has been pierced in the base, possibly in order that the vase may be used as a rhyton.

The body shape is comparable with *MP* stirrup jar Type 177 (Myc. IIIC), but the shape of the neck appears to be very rare. Probable date L.M. IIIB 2.

VIa. **4.** Two-handled Jar (FIG. 28). Ht. 0·038. Diam. 0·029. Diam. of base 0·012. The vase has a simple linear decoration around the belly and the lower quarters. The handles and neck are unpainted. On the upper shoulder there is a wavy line looped over at each end.

The body shape corresponds to *MP* Type 107; the Mycenaean vases of this type, however, are usually smaller and have only one handle. The date is probably L.M. IIIB 2, because the ornamentation is debased, but the shape of the body in similar Mycenaean vases is found throughout the Myc. IIIB period.

VII. **1.** Belly-handled Amphora (FIG. 27, PLATE 56*c*, *e*). Ht. 0·41. Max. diam. 0·32. W. over handles 0·35. Diam. of base 0·14. Symmetrically ovoid body, with flat base and concave splaying neck. The handles are round in section and are attached to the broadest part of the body. The decoration is brown and applied in horizontal linear bands with a wavy line at the level of the handles. There are thin vertical strokes between the bands on the upper surface of the body. The outside of the neck is filled in, and four primitive net patterns are grouped above the wavy line. The clay is buff and of poor quality.

The shape may be compared with Furumark's Myc. IIIC Type 58. A similar vase from Phaistos (*MA* xiv (1904) 644, fig. 110) has an extra pair of handles on the shoulders. It is not easy to classify the present vase, which is certainly one of the latest in the cemetery, but it appears to belong to the transition between LM. IIIB 2 and Sub-Minoan. It was found in the group (evidently contemporary) containing L.M. IIIB 2 stirrup jars (VII. **3–7**).

VII. **2.** Belly-handled Amphora (FIG. 27, PLATE 57*a*). Ht. 0·394. Max. diam. 0·355. Diam. of mouth 0·165. The body is restored from fragments, and has a spreading foot, and a flaring neck. The clay is gritty and brown and there is no slip. There are traces of linear bands around the body and radial strokes decorate the upper surface of the lip.

Furumark's Type 63 is comparable, but lacks the flaring neck. The vase is later in type than the accompanying stirrup jars, and should be placed in the Sub-Minoan period.

VII. **3.** Stirrup Jar (FIG. 27, PLATES 56*a*, 57*b*). Ht. 0·133. Max. diam. 0·109. Diam. of base 0·037. The body is biconical, globular and rather asymmetrical. The foot is ringed and there is a wide lip to the mouth. The handle has horizontal strokes on its sides and concentric circles on the false neck disk. A net pattern of triangles fills the upper panels of the body.

Very elaborate decoration of the shoulder zones is a notable feature of stirrup jars in Crete in the L.M. IIIB 2 period (cf. *MP* 210–12). The shape of this vase, however, is not peculiar to Crete, since it corresponds with an early Myc. IIIC type (*MP* Type 176) which is common in Rhodes.

VII. **4.** Stirrup Jar (FIG. 29, PLATES 55*c*, 56*a*). Ht. 0·168. Diam. 0·161. Diam. of base ring 0·055. The jar is complete; it has a globular body, a ringed base, and an upright flaring spout. The false neck disk has a cone. The air-hole is unusually large. Three concentric squares surround the cone, and the upper side of the handle is painted with five transverse stripes on each side of the disk. Linear decoration runs round the body, except at its maximum diameter, where a band is left unpainted. Behind the handle two arcs enclose a zone which is filled with groups of five or six strokes set at angles to each other. The triangular panels on each side of the spout are occupied by similar groups.

The jar is closest in shape to Furumark's Type 175, but the triangular panel decoration is very rare in mainland Greece in Myc. IIIC 1, and most common in Crete in the L.M. IIIB 2 period, to which the vase belongs. The painting is dark brown and there are traces of yellow slip on the buff clay.

VII. **5.** Stirrup Jar (FIG. 27, PLATE 56*a*). Ht. 0·131. Max. diam. 0·113. Diam. of base 0·037. The spout is broken. Globular body with high shoulder and ringed base. There are vertical stripes on the handles and horizontal bands around the belly. Elaborate triangles interlock on the upper shoulders. The clay is brown and forms a ground for the decoration.

The triangles are of a type common on late vases from Crete (see *MP* 407). *MP* Motive 71, 10 is similar, and confirms that the vase should be dated in L.M. IIIB 2.

VII. **6.** Stirrup Jar (FIG. 27, PLATES 56*a*, 57*b*). Ht. 0·11. Max. diam. 0·097. Diam of base 0·041. The body is globular, and rests on a ringed base. The false neck disk has a cone on top. The spout is upright, having a flaring lip. The handles are round in section. The brown decoration is arranged in horizontal bands around the base ring and the belly. There is a triangular panel on either side of the spout, enclosing groups of parallel strokes (cf. VII. **4**).

The motive is a L.M. IIIB type, examples of which are discussed by Furumark in *OpArch* iii (1944) 248–50. The vase belongs to the L.M. IIIB 2 period. The vase illustrated in *Mirabello* 60, D 8 is similar in shape but lacks a cone on the false neck.

VII. **7.** Stirrup Jar (FIG. 27, PLATE 56*a*). Ht. 0·11. Max. diam. 0·102. Diam. of base 0·034. Squat globular body with ringed foot. The dark-brown paint is almost invisible, but there are traces of decoration and adder marks on the upper surfaces. The clay is buff with orange biscuit. The upright spout touches the top of the false neck and is level with it. There is an air-hole behind the false neck, and the spout-hole is very narrow. The top of the false neck is slightly depressed.

The shape of the vase shows that it is a late type, comparable with the jar from Milatos (*PT* 87, fig. 106, s), which belonged with the other stirrup jars in the same tomb to the L.M. IIIB 2 period, being about contemporary with the L.H. IIIC period's first phase in mainland Greece.

VII. **8.** Stirrup Jar (FIG. 27, PLATE 56*a–b*). Ht. 0·135. Diam. 0·119. Diam. of base 0·046. The globular body is surmounted by an upright spout and a false neck with a coned disk. The base is ringed. There are horizontal lines on the front of the spout and the outside of the handle. There is an air-hole behind the false neck. Three linear bands surround the belly and two groups of concentric arcs rest on the upper band in front of the spout, and another group is similarly placed behind the handle. The clay is light brown and the painting black, but worn.

The placing of the arcs is similar to the decoration on the vase from Mouliana drawn by Furumark in *OpArch* iii (1944) 225, fig. 9, *i*, but the filling-design differs. For the shape of our vase compare *Mirabello* pl. xi, D 11, and a vase from Tylissos illustrated by Marinatos in *AM* 1931, 117, pl. 4. Like the other vases in the tomb the jar belongs stylistically to the L.M. IIIB 2 category.

VII. **9.** Single-handled Jug (FIG. 27, PLATES 56*a*, 57*b*). Ht. 0·118. Ht. at lip 0·105. Max. diam. 0·079. Diam. of base 0·037. The surface is rather worn and the paint has faded. The lower part of the pot is asymmetrical, giving a rather baggy appearance. The thin swept-up handle is oval in section, and the mouth is trefoil in form. There is a continuous brown wavy band on the upper shoulder. The neck is painted, and a single line marks the upper surface of the handle. The joint between the handle and the shoulder is marked by a thin ring of paint. A thick band surrounds the belly with two thinner bands above it and two below, the bands being higher at the front below the spout than at the rear below the handle. The clay is buff and well levigated and there is no slip. A wavy line on the shoulder is reminiscent of Protogeometric decoration.

The shape is common in mainland Greece in the Myc. IIIC 2 period and corresponds with Furumark's Type 137. The vase from Ialysos *BMA* 883, pl. XIII, is very close in shape. The type is discussed by Desborough, *Protogeometric Pottery* 46. The decoration shows that this is a very late vase, which should probably be placed on the boundary between L.M. IIIB 2 and Sub-Minoan.

VII. **10.** Spouted Cup (FIG. 28, PLATE 56*a*). Ht. to top of handle 0·094. Diam. of rim 0·176. Ht. of rim 0·052. Diam. of base 0·048. The cup is slightly broken and the creamy slip is worn in places. The clay is well levigated and there is no decoration. The handle is flattened in section. The spout is bridgeless and set at 90 degrees to the handle. The shallow semi-globular body tapers to a flat, narrow base, which makes it rather unstable.

The fabric is very like that of some late L.H. IIIB or early L.H. IIIC vases from the Greek mainland, and it is possible that this spouted cup is not of local manufacture. The shape corresponds with Furumark's Type 253, in which the foot is generally pronounced, but the handle sweeps upwards, as the handle of this vase does. Most Mycenaean shallow cups have a low handle, similar to that of VI. **1.** The vase should, to judge from its shape and the quality of the fabric, be placed on the boundary between Myc. IIIB and IIIC 1. For another example of this type in Crete, cf. *ADelt* ii (1928) pl. 1, no. 15.

VII. **11.** Two-handled miniature Pyxis (FIG. 28, PLATE 56*a*). Ht. 0·065. Ht. to top of handles 0·082. Diam. of base 0·07. The rim is chipped and part of one handle is missing. The light-brown clay has no decoration and there is no slip. The diameter of the body is greatest close to the base. The rim inclines inwards, but the overhang of the lip extends as far as the widest part of the body. The base is slightly concave underneath. No lid was discovered. There was also no lid with the similar pot in the Aspa cemetery illustrated in *Palaikastro* 97, fig. 81. The date of both vases is probably L.M. IIIB 2.

VII. **12.** One-edged knife. (FIG. 32, PLATE 60*a*). Iron with bronze rivets. L. 0·16 (blade 0·115, handle 0·045). Max. W. of blade 0·022. Surviving W. of handle *c.* 0·016. L. of rivets

10 and 9 mm. Severely corroded and in three fragments; there is a good join between the two broken parts of the blade, but so much corrosion at the join in the handle that the edges do not fit each other; part of the second rivet-hole, however, is present in both. The back of the knife (blade and handle) has a gentle convex curve. The blade being broader than the handle, the lower (cutting) edge makes an angle where they meet like that of the modern table knife. The handle has well-marked flanges and two rivet-holes with bronze rivets to hold in place panels of perishable material, probably wood, of which a thin covering remains. Inside larnax.

VII. **13.** Pin (FIG. 34, PLATE 60*a*). Bronze. L. 0·26 (shaft 0·226, decorated zone 0·034). Max. diam. of shank 3·5 mm. Diam. of globe 9 mm. The pin is in fair condition, but the top appears to be broken and it may have been slightly longer. There is an elongated globular swelling 0·019 below the top, and eleven ribs or mouldings above the globe, four below; the mouldings are 2 mm. apart. The shank is circular in section.

VII. **14.** Pin, in five fragments (FIG. 34, PLATE 60*a*). Bronze. L. *c.* 0·107 (decorated zone 0·019). Max. diam. of shank 1·5 mm., diam. of globe 5 mm. The pin is almost certainly incomplete and is badly corroded. A section of shank is probably missing below the decorated 'head'. This is a smaller version of VII. **13.** The shank is round in section, there is an elongated globular swelling with eight mouldings above and three surviving below. The mouldings are 1·5 mm. apart and diminish in diameter, tapering towards the top. The bend in the shank is no doubt accidental.

VII. **15.** Pin, in four fragments (PLATE 60*a*). Bronze. L. 0·075 (decorated zone 0·021). Max. diam. of shank 2·5 mm. Very corroded and incomplete. This is the smallest of three similar pins with VII. **13** and **14.** The shank is circular in section; there are three mouldings below the swelling and eleven above, the latter taper to a fine point.

VII. **16.** Pin (FIG. 34, PLATE 60*a*). Bronze. L. 0·203. L. of shank to bend 0·175. Max. diam. of shank 4 mm. W. of neck 4 mm. Depth of neck 1 mm. The pin may be complete, but the 'head' is badly corroded. The shank has a circular section as high as the S-bend, from where it becomes almost flat for 0·015; the top is thicker but very corroded and may be broken—if so, there is no indication of how the head ended.

VII. **17.** Finger ring (FIG. 33, PLATE 60*b*). Bronze. Broken. Found with a mass of finger bones.

VII. **18.** Finger ring, or perhaps ear-ring like IX. **3** (FIG. 33, PLATE 60*b*). Bronze. Broken in five pieces. Diam. 0·015/20. Circular section.

VII. **19.** Fragment of bronze wire bent in a circle (FIG. 33). Diam. 4 mm. Found 0·25 above floor of tomb by skull outside larnax at north end.

VII. **20.** Sealstone, lentoid (HM 1739) (PLATES 62–63). Hard dark-green stone. Cracked in half when found, but mended. W. 0·01. L. 9 mm. Diam. of string-hole at one end 1 mm., at the other 1·5 mm. Decorated with a bold design of a talismanic character. Found with vases VII. **10, 11,** underneath the larnax.

Probably L.M. I (Kenna). Cf. Ashmolean Mus. 1941. 143, 150.

VII. **21.** Sealstone, amygdaloid (HM 1738) (PLATES 62–63). Agate, veined orange speckled with red. Broken and cracked; one end chipped and missing, evidently before the seal was put in the tomb. L. as preserved 0·013. W. 0·01. Diam. of string-hole 1 mm. Decorated with a flying fish, cut in a fine style which must be assigned to Late Minoan I. Found by skull outside larnax at north end.

Cf. Ashmolean Mus. 1941. 108. The motif of the flying fish is characteristic of M.M. III–L.M. I. See Ashmolean Mus. 1938. 972 for an example of the fine naturalistic style.

VII. **22.** Bead, barrel-shaped (FIG. 34, PLATE 59*a*). Grey steatite. L. 0·014. W. 0·013. Found below skull outside larnax at north end with VII. **23–25.**

VII. **23.** Bead (FIG. 34, PLATE 59*a*). Flattened spherical. Diam. 0·01. Ht. 5 mm. Diam. of string-hole 1·5 mm. Amber; much of the surface has disappeared, but enough remains to show the shape of the bead; honey-yellow with darker patches; the surface has become granular and flaky, but if rubbed, a smoother, typically resinous texture is shown beneath. Found below skull outside larnax at north end with VII. **22, 24–5.**

VII. **24.** Bead, consisting of four minute globes joined together (PLATE 59*a*). Carnelian. W. 8 mm. With VII. **22, 23, 25.**

Compare one from Isopata, tomb IA, apparently of gold (*TDA* 6, fig. 10*e*). Several beads of this type in gold, and others in faience, were found by Tsountas at Mycenae. Others in gold from Menidi (Lolling, *Das Kuppelgrab bei Menidi* pl. v, 29), and Tholos A at Kakovatos (*AM* xxxiv, pl. 13. 38, 39).

VII. **25.** Bead, with four deep flutes and collar ends (FIG. 34, PLATE 59*a*). Blue faience. Diam. 6 mm. Ht. 6 mm. With VII. **22–24.**

VII. **26.** Stirrup Jar. Fragment only. Dark-brown clay. Triangular panel decoration on remaining part of shoulder. L.M. IIIB 2. From surface of rock outside tomb VII.

VII. **27.** Stirrup Jar. Fragments only. Dark-brown clay. L.M. IIIB 2. From surface of rock outside tomb VII.

IX. **1.** Miniature Stirrup Jar (FIG. 28, PLATE 57*d*). Ht. 0·053. Diam. 0·064. Diam. of base 0·026. One handle is missing. The body is squat and globular. There is no base ring. The painting is brown on a gritty yellow clay surface. Horizontal lines surround the belly and the lower surfaces. A diamond net pattern fills the triangular panels on the shoulders of the body.

A spiral decorates the top of the false neck disk (cf. *MP* Motive 52, 7). Spirals are common on the top of Myc. IIIB and later false-necked jars (see *MP* 370): the form of spiral on the present vase corresponds to a type common in L.H. IIIC 1, and together with the triangular panels suggests that it should be dated to L.M. IIIB 2. For the shape, cf. *BM* A 989, p. 183 (from Gurob). Found above larnax.

IX. **2.** Miniature Deep Bowl (FIG. 28, PLATE 57*d*). Ht. 0·048. Diam. 0·06. Diam. of base 0·04. A complete vase made of poorly levigated clay and rather irregular in profile. The neck is low and contracted, and there are two lugs at opposite sides of the body at the join with the neck. The base is flat. Inside larnax.

A debased form of the small L.M. II cylindrical jar, for which see *Palaikastro* 67. L.M. IIIB 2.

IX. **3.** Ear-ring (FIG. 33, PLATE 60*b*). Bronze. Broken, but complete. Diam. *c.* 0·018. Beneath skull I in larnax.

This form of ear-ring goes back to Middle Minoan times in Crete, e.g. tomb XVIII. 6.

X. **1.** Pilgrim Flask (FIG. 29, PLATE 56*g*). Ht. 0·115. Max. diam. 0·083. Diam. of base-ring 0·032. The lip is chipped, but the painting is well preserved. The base is ringed and concave, with a convex cone at the centre. The neck is unusually tall. The body is globular. The tip of the lip and the whole of the upper neck are painted solid. A net pattern occupied the shoulders. The clay is buff with a dull-yellow slip.

The Myc. IIIB flask illustrated by Blegen, *Prosymna* fig. 176, no. 325, has a long neck but the body is more squat. Most Mycenaean versions of this jar have a short neck. For another example of this type with a long neck also found at Knossos, see *PT* 123, fig. 117, no. 76*e*. The diaper net pattern has a wide range chronologically, but this flask is of good workmanship and can be assigned with some confidence to the L.M. IIIA 2 period, to which *MP* Type 188 belongs.

X. **2.** Single-handled Lamp or Brazier (FIG. 29, PLATE 56*g*). Ht. of raised lip 0·095. W. over lip 0·135. L. incl. handle 0·2. The base and the upper sides of the lip are flat. Part of the lip is broken. Traces of blue paint were found on the lamp. The gritty buff clay is unevenly fired.

Compare the lamp from the Temple Tomb (*PM* iv. 1011*f*) and that from the Gold Cup Tomb at Knossos (*BSA* 51. 92; cf. *BSA* xlvii. 271, fig. 13); also one from Mycenae (*ChTs* pl. xliv, tomb 518, no. 45: L.H. I (Wace)). The blue paint suggests that the lamp was originally painted in unfixed colours. Several blue-painted lamps were found in a L.M. tomb at Katsamba (*KCh* 6 (1952) 11). Lamps of this type, whether painted or not, appear to be much more common in Crete than in mainland Greece.

X. **3.** Mirror (FIG. 32, PLATE 58*d*). Bronze. In good condition. Diam. 0·14. Two rivet-holes (diam. 3–4 mm.), 0·017 apart, for fastening the wooden handle, the shape of which was clearly visible round the holes. The edge of the mirror runs straight for about 0·04 where the handle covered it, and is bent over here. Found lying flat on the floor of the tomb below burial II.

For such mirrors, see Evans (*PT* 115). They occur in the graves both of men and of women, sometimes a pair in one grave. Evans notes that no mirrors were found in the shaft-graves at Mycenae, and suggests that they were probably introduced to the Aegean 'about this time', i.e. the beginning of the Late Bronze Age, from Egypt.

X. **4.** One-edged razor (FIG. 33, PLATE 58*d*). Bronze. L. 0·177. Max. W. 0·079. L .of tang 0·043. Back of blade 4 mm. thick. L. of rivets 0·012 to 0·013. Moderately good condition, but part of the bottom of the blade corroded away. Apart from the shorter tang this is the same as I. **8**; the grooved and ridged decoration on the blade is the same, but nothing remains of the handle plating.

X. **5.** Bead, flattened spherical (FIG. 35, PLATE 59*a*). Gold. Diam. 5 mm. Ht. 4 mm. Diam. of string-hole 1 mm. Hollow, and presumably with an original core of paste or wood. With burial II.

Gold beads of this type are discussed by Blegen, *Prosymna* 269–70. Cf. Knossos (*PT* 59, tomb no. 41; *TDA* 33, tomb 6*h*). Mycenae: several from tombs dug by Tsountas in Athens Nat. Mus.; also three found by Wace (*ChTs* 192 and 63, no. 80*e*, *j*: T. 515, from pit (L.H. II); 74, no. 46; T. 517 (L.H. III)).

X. **6.** Bead or amulet, heart-shaped (FIG. 35, PLATE 59*a*). Soft light material, paste or faience, black with large patches of white. Part of one corner broken and missing. L. 0·019. W. 0·012. With burial II.

The type is discussed by Evans (*PM* iii. 410, fig. 273), who illustrates one of solid gold from the drain shaft in the Domestic Quarter, which should be M.M. IIIB, and refers to two other examples, one in carnelian, and one in amethyst with an intaglio of a flying eagle. Others from the Mavro Spelio cemetery (*BSA* xxviii. 288 of steatite); Gournia (*Gournia* 55, fig. 35, 3*a*, *b* of rock crystal—described as 'a favourite form'); Avgo (*AJA* ix. (1905) 284, no. 23; cf. 280, fig. 1, of 'magnetite'). Two of bronze and two of light-blue glass from Platanos in Herakleion Museum should presumably be of M.M. date.

Rivets of this shape occur on a cup from the shaft-graves at Mycenae (*SG* pl. cxiii).

X. **7.** Bead or pendant (FIG. 35, PLATE 59*a*). Carnelian, orange with darker streaks and dusky blobs. Cracked, and chipped round the string-holes at each end, as if it was an older bead continuing in use a long time. L. 0·015. Max. diam. 6 mm. With burial II.

Cf. Mycenae, from the shaft-graves (*SG* 58, no. 114, pl. xxv) and later (*ChTs* 106: T 529, 36: L.H. I (Wace)); *Prosymna* 291, pl. 161. 9: T. xxix; pl. 460. 1, 3, 14, 15: T. iii.

X. **8.** Bead, flattened globular (FIG. 35). Soft white crystalline stone, perhaps gypsum. The surface much decayed. Diam. *c.* 0·012. Ht. 9 mm. With burial II.

X. **9.** Bead, disk with concave ends (FIG. 35, PLATE 59*a*). Diam. 9 mm. Ht. 4 mm. Diam. of string-hole 2 mm. With burial II.

X. **10.** Bracket-shaped ornament (FIG. 35, PLATE 59*a*). Material as X. **6.** Broken, and badly damaged. L. preserved 0·014. W. 0·01. With burial II.

Cf. Mycenae: several examples from tombs dug by Tsountas, e.g. *AE* 1887, pl. xiii, 18. Many others have been found both in Crete and on the mainland, together with moulds for making them (*PM* i. 487–9, fig. 349; Schliemann, *Mycenae* 107–9, figs. 162–3).

X. **11.** Bead, gadrooned (FIG. 35, PLATES 59*a*, 60*d*). White crystal. Finest condition. Diam. 0·017. Ht. 0·015. Diam. of string-hole at one end 3 mm., at the other 3·5 mm. Seven flutes, and two lines engraved on each rib between the flutes. With burial II.

For the shape see *Prosymna* fig. 599, 10, but this has only five instead of seven flutes.

X. **12.** Bead, flattened globular (FIG. 35). Soft black and white ? steatite. Broken, and about a third missing. Diam. 5 mm. Ht. 4 mm. Found in sieving, but probably from burial II.

X. **13.** Group of beads, covering an area about 0·18 × 0·10 behind the skull of burial II (FIG. 35, PLATE 60*c*). Probably a necklace, if the beads were arranged in a single row. (1) Rosettes. Remains of about twenty-five or more. In three sizes (diam. 10, 9, 8 mm.), the two larger apparently with eight petals, the smallest with six. All have a double string-hole (diam. *c.* 1 mm.). Greyish paste or glass-paste, much corroded and very brittle. (2) Long gadrooned beads, also apparently in three sizes (L. 19, 13, 11 mm.), and of the same material as the rosettes. Remains of about twelve or more. (3) Two 'Sacral Ivy' beads. L. 9 mm. W. 0·01. Double string-holes. Pale whitish-blue opaque glass. Found together, one on top of the other. (4) One very small flattened globular bead. Diam. 4 mm. Material as the rosettes.

Sacral ivy beads exactly like ours were found in a tomb dug by Alexiou at Pachiammo in East Crete (*KCh* 8 (1954) 408, pl. ΣΤ, 2) assigned to L.M. IIIA 2/? B. Others were associated with rosettes of two sizes in tomb I at Gournes (*ADelt* 4 (1918) 68, fig. 12). Elaborate ivy ornaments in faience and in gold were recovered by Tsountas at Mycenae.

For other rosettes from Crete, e.g. Phaistos (*MA* xiv. 111, fig. 76, 138, fig. 104: rosettes with six petals). Cf. one from Milatos (*PT* 95). Evans notes (ibid. 103) that glass-paste rosettes of this type are a 'somewhat late characteristic'. There were none from the Zafer Papoura cemetery at Knossos, but gold rosettes were found there (ibid. 71, fig. 80), and at Phaistos.

Rosettes of various sizes, both of paste (*AE* 1887, pl. 13; tomb 10 in Athens Nat. Mus.) and of gold (tomb 95 in Athens Nat. Mus.), were found by Tsountas at Mycenae. Cf. paste examples from *Prosymna* 304, tombs xli and xliv.

X. **14.** Bead, ribbed (PLATE 59*a*). Soft yellow sandy paste or faience. Good condition. Diam. 0·107. Ht. 0·01. From the floor of the tomb below the razor X. **4**, evidently inside a wooden box.

For the type, see under II. **2.**

XI. **1.** Stirrup Jar (FIG. 29, PLATE 57*c*). Ht. 0·96. Max. diam. 0·077. Diam. of base 0·03. The edge of the foot is chipped. The tall piriform body has a splaying foot. The spout is thick and the handle is flattened in section. There is a fine buff clay ground for the decoration. Horizontal bands, much worn, occupy the sides, and the shoulders are decorated by a repeated S-pattern, rows of dots, and a group of inverted chevrons at the base of the spout.

The lower part of the body is narrower than on most Minoan piriform stirrup jars. For the general shape cf. *PT* 120, fig. 114, 76*d*, which is L.M. IIIA 2 (Furumark). The compressed decoration of the shoulder zone and the style of the chevrons suggest, however, a date in L.M. IIIB 1. Cf. *PT* fig. 100 opp. 89, no. 99*u* (dated by Furumark to IIIB 1).

XI. **2.** Stirrup Jar (FIG. 29, PLATE 57*c*). Ht. 0·105. Diam. 0·116. Diam. of base 0·05. The jar is complete but the decoration has faded. There is a smooth slip, the foot is ringed, and there is no air-hole. There is an orange linear band around the foot, and other horizontal bands around the belly. The shoulder zone is filled by triangular groups of concentric arcs, three behind the handle and one on each side of the neck, there being five to eight arcs in each group.

The motive is approximately *MP* no. 44, 10: Myc. IIIC 1. The spout is thickly striped at the base and around the mouth. There is a large round spot on the top of the false neck, a motive well illustrated by a group of Myc. IIIA/B transitional vases from Gurob (*BM* A 987, 988, 989). Vase 1 from Mycenae T 519 is similar in shape (*MP* Type 178; cf. *ChTs* 88, pl. xliv). The quality of the potting is good and soft to the touch. Chronologically it belongs to the transition between L.M. IIIB 1 and 2.

XI. **3.** Spouted Jar with basket handle (Drinking Jar) (FIG. 29, PLATE 57*c*). Ht. to top of handle 0·11. Max. diam. 0·08. Ht. of rim 0·08. Complete. Biconical body with spreading neck and flat foot. The body surface is uneven, but the clay is not gritty. The spout is set at an angle of 45 degrees, and there is a single lug at the junction between the handle and the mouth. Dark-brown painting with clay ground. Three uneven bands surround the belly. There is one band round the base and another just above it. There are horizontal stripes on the handle, and pairs of vertical lines form panels on the shoulders which are alternately left empty and filled with parallel wavy lines. The underside of the foot is slightly concave.

Most Mycenaean versions of this pot have more rounded body contours, and ringed bases. The lug is unusual. The wavy lines in panels are a late motive (cf. *MP* 373, Motive 53, 28 belonging to Myc. IIIC 1). On grounds of shape and decoration the vase may be assigned to the end of the L.M. IIIB 1 phase or the beginning of the succeeding one.

XI. **4.** Small bronze point, like IV. **3**, but with circular section (FIG. 33). L. 0·012. Beneath larnax II.

XI. **5.** Conical spindle-whorl. Dark greenish-grey steatite flecked with white. Diam. 0·017. Ht. 0·01. Diam. of string-hole 2·5 mm. Under vase XI. **2** beneath larnax II.

XI. **6.** Conical spindle-whorl. Purple steatite. Top of cone broken and missing. Diam. 0·023. Ht. as preserved 0·016. Beneath larnax II.

XI. **7.** Conical spindle-whorl. Steatite, as XI. **5.** Rather worn condition. Diam. 0·02. Ht. 0·015 Diam. of string-hole 3 mm. From floor of tomb against wall behind larnax II.

XI. **8.** Bead, biconical (FIG. 35, PLATE 59*a*). Haematite. L. 0·01. Diam. 7 mm. When found the bead was entirely coated with verdigris. Inside larnax II, among bones immediately east of skull.

XI. **9.** Bead, flattened oval. Material apparently glass. Complete in position when found, but disintegrated on removal. L. 0·025. W. 0·015. Th. 8 mm. Diam. of string-hole *c.* 4 mm. Inside larnax II.

XII. **1.** Conical spindle-whorl (FIG. 35). Dark grey-green steatite flecked with white, like XI. **5, 7.** Elegant shape, and mint condition with no signs of wear round the string-hole. Diam. 0·023. Ht. 0·014. Diam. of string-hole 3 mm. Beneath larnax II.

XIIa. **1.** Spouted Jar with side handle (Drinking Jar) (FIG. 29). Ht. incl. handle 0·106. Max. diam. 0·076. The whole of the neck, parts of the body, and the tip of the spout are restored. The base is chipped. The whole vase is painted in dark brown. There are mat marks on the foot. Probable date L.M. IIIB 2.

XIIa. **2.** Amulet, in the shape of a figure-of-eight shield (FIG. 35, PLATE 59*a*). Faience or glass paste, bright azure blue with streaks of dark blue in it. Brittle, and the surface rather pocked; part of one side missing. Perforation through the waist. L. 0·028. W. 0·018. Max. thickness 8 mm.

XIIa. **3.** Bead. Pale-green faience or glass. Much perished and the surface entirely gone. Diam. (outside) 8 mm. (inside) 5 mm.

XIII. **1.** Pin or needle. Bronze, much corroded and broken. Total L. 0·107. From floor of tomb by larnax.

XIII. **2.** Conical spindle-whorl. Hard white and pink veined stone. The surface of the white parts of the stone rather perished. Diam. 0·02. Ht. 0·013. Diam. of string-hole at top 4 mm., at bottom 3 mm. Resting cone upwards on floor of tomb by larnax.

XIV. **1.** Miniature Stirrup Jar (FIG. 29, PLATE 57*e*). Ht. 0·058. Max. diam. 0·06. Diam. of base 0·014. Complete. It has no base ring. The belly is unpainted, but there are bands around the lower part and the foot. Two parallel horizontal bands surround the shoulder zone, and enclose a series of chevrons which runs horizontally behind the handles. There is a diamond on the shoulder on either side of the spout. The upper side of the handle is painted, and there is a circle on the false neck disk. All the decoration is brown. The coarse buff clay is pitted in places, but it is smooth and hard to the touch.

In shape the vase is similar to *MP* 'Weighed-down' Type 178, and another vase from Knossos (*PT* 120, fig. 114, no. 95*a*) may be compared with it. The date is probably L.M. IIIB 1.

XIV. **2.** Single-handled Brazier (FIG. 29, PLATE 57*e*). Ht. 0·058. W. 0·14. L. incl. handle 0·18. Diam. of base 0·04. Parts of the lip and of the handle are missing, and there is no decoration. The clay is red but has black traces in it. The lip is raised in front of the handle, probably to protect the hand of the carrier. The handle curves downwards to improve the balance. The base is flat, and the sides concave outside.

For the raised lip cf. *PT* 124, fig. 118, nos. 32 and 98*c*. For the lowered handle compare the handle on the brazier from Mycenae tomb 518 no. 13 (*ChTs* pl. xliii). The brazier probably was used to fumigate the tomb (cf. Wace in *ChTs* 83 and 140–1). This type of brazier is common in Crete, and the present example, which corresponds closely with Myc. IIIB ones, should be placed in L.M. IIIB 1 (cf. *MP* Type 312, which has a chronological range from L.H. I to L.H. IIIB).

XV. **1.** Spouted Jug (FIG. 30, PLATE 55*d*). Ht. 0·245. Max. diam. 0·192. Diam. of base 0·061. The surface is slightly chipped. A plastic ring covers the join between the neck and the body. The dark brown painting has been neatly and symmetrically applied. The spout and the handle are painted solid. A foliate band covers the shoulders, and linear bands run around the belly and the base.

The shape of *MP* Type 144 is identical, and suggests a date for the vase in the L.M. IIIA 1 phase. A similar Minoan vase, also from Knossos, is illustrated in *PT* 123 fig. 117, no. 64a, which is L.M. IIIA 2 according to Furumark. For the decoration see also the stirrup jar, *PT* 67, fig. 73, which Furumark makes L.M. IIIA 1 (*MP* 173).

XV. **2.** Single-handled Cup (FIG. 30, PLATE 55*d*). Ht. 0·055. Diam. 0·12. Diam. of base 0·036. The cup is completed from joining fragments. Some bits are missing from the rim and sides. The papyrus motive executed in dark-brown paint approximates to the Mycenaean flower (*MP* Motive no. 18). Vertical wavy lines are placed to the right of the handle, the base and edges of which are outlined. The inside has been painted solid. The finely levigated clay gives a glossy effect where the surface is worn. The base is flat and rimless; the unevenness may be due to the impressions of a mat on which the pot was stood to dry before firing.

Furumark Type 219 is similar but has a ringed base. For the shape cf. *Prosymna* fig. 125, no. 258. The papyrus motive is similar to the flowers drawn on a jug from the Warrior Graves at Knossos (*BSA* xlvii (1952) 265, T. ii. 1). Like the jug the cup probably belongs to the beginning of the L.M. IIIA period, and must be close in date to the cup I. **3** from tomb I. The execution of the decoration is most careful, and the fabric is of the highest quality, being in no way inferior to the vases from tomb I.

XVIII. **1.** Bowl (FIG. 31, PLATE 53*d*). Broken but complete. Diam. 0·127. Ht. 0·044. Wheel-made, buff-clay, decorated in brown lustrous paint by dipping into the paint upside down, so that the paint covers the inside and the outside of the rim. The vase was then stood on its base allowing the paint to trickle down its sides. Beside skull of burial III.

XVIII. **2.** Juglet (FIG. 31, PLATE 53*d*). Complete and unbroken. Ht. to top of rim 0·078. Well made, apparently on the fast wheel. Fine orange clay with overall rather thin reddish-brown lustrous wash which covers the bottom of the base and the inside of the rim. The base smooth, and slightly sunk; 'metallic' strap handle. Beside skull of burial III.

XVIII. **3.** Miniature handleless cup (FIG. 31, PLATE 53*d*). Broken but complete. The sides pinched in so that the rim is somewhat oval. Diam. 0·04/45. Ht. 0·03. Fine orange clay with the surface wet smoothed. Beside skull of burial III.

XVIII. **4.** Miniature handleless cup, as XVIII. **3** (FIG. 31, PLATE 55*d*). Complete and unbroken. Diam. 0·043. Ht. 0·032. Fine orange clay with the surface wet smoothed. Beside skull of burial III.

XVIII. **5.** Sealstone, lentoid (HM 1737) (PLATES 62–63). Hammered silver or meteorite. Diam. *c.* 0·013. Max. thickness 4 mm. Diam. of string-hole *c.* 1·5 mm. Engraved with a design of a wild goat, apparently sitting above a rocky landscape. In fine condition, although somewhat worn. The seal before cleaning was entirely coated with verdigris. Found lying on its edge immediately below an ? arm bone of burial VII.

M.M. IIIA (Kenna). 'Except for the horn and ear most of the engraving is done by the wheel. The work shows a more advanced technique than that of Brit. Mus. 3 (A).'

XVIII. **6.** Pair of circular ear-rings (FIG. 35, PLATE 60*b*). Silver, much corroded, and both broken. The one which was best preserved had the ends overlapping as it was found, but the other appears to have been open. Made from narrow strips of metal bent round to make hollow tubes. From beneath skull of burial IV, but removed by the workman before their position could be studied. Possibly therefore not two ear-rings, but a single ear-ring with two circular links, like the triple-linked ear-rings represented on a fragment of fresco from Knossos (*PM* ii. 312, fig. 231).

This circular type of ear-ring had a long life in Crete. Several examples (unpublished) were found in Middle Minoan III contexts in a tomb of the Ailias cemetery (see *JHS* lxxiv (1954) 166). Cf. Mavro Spelio cemetery (*BSA* xxviii. 252, T. iii. 3); Voros (Mesara) (*ADelt.* 13 (1931) 165, fig. 27). For Late Minoan examples, see VII. **18** and IX. **3.** Such ear-rings have also been found on the mainland dating from the Middle Bronze Age, e.g. Blegen, *Zygouries* 202, fig.

189: M.H. I. It is interesting that ear-rings of this kind appear in the tholos tombs of South Spain.

XVIII. **7.** Staple, made from a piece of bronze or copper wire bent at an angle (FIG. 35, PLATE 60*b*). Ht. 7·5 mm. W. 9 mm. Circular section, blunt ends. Cf. Staples from L.M. Warrior-graves at Knossos (*BSA* xlvii. 271, iii (16), and 51·99, pl. 16a). Found with the lower jaw of burial VIII.

XVIII. **8.** Bead, flattened globular (PLATE 60*b*). Hard black mottling to bright-green ? haematite: the bead when found was entirely coated with verdigris. Diam. 4 mm. Ht. 3 mm. Diam. of string-hole 1·5 mm. Behind skull of burial II.

XVIII. **9.** Oval-mouthed Amphora (FIG. 31). Large parts missing. Ht. 0·041. Orange clay, with orange and grey grit. Three broad bands of dark-brown lustrous paint round the body, and a large blob each side on the shoulder between the handles; bands round the lip and neck. From surface fill above ante-chamber.

XVIII. **10.** Cup with strap handle (FIG. 31, PLATE 53*c*). Broken but complete. Ht. 0·072. Diam. *c.* 0·095. Thin-walled, with slight spiral fluting of the outside surface. Fine orange clay, with red-brown to deeper purple-brown lustrous wash. From fill of ante-chamber.

XVIII. **11.** Cup with strap handle (PLATE 53*c*). Broken but complete, except for parts of the handle missing. Ht. 0·071. Diam. *c.* 0·095. Fabric as XVIII. **10.** From fill of ante-chamber.

XVIII. **12.** Cup with strap handle (FIG. 31, PLATE 53*c*). Broken but virtually complete. Ht. 0·07. Diam. *c.* 0·105. Fine orange clay with traces of a lustrous wash, as XVIII. **10.** Trial *c.* 5 metres south of tomb XVIII at depth 1·60 m.

XVIII. **13.** Bowl (FIG. 31). About a third, including most of rim, missing. Ht. 0·056. Diam. as restored *c.* 0·10. Faint traces of concentric string-marks on the base. Fine orange clay, with the surface paler due to incipient wet-smoothing. Deep in fill of chamber.

XVIII. **14.** Small shallow bowl (FIG. 31). Broken but virtually complete. Ht. 0·032. Diam. *c.* 0·104. Aggressive spiral fluting from fast wheel round the inside, and concentric string-marks on the base. Fabric as XVIII. **13.** Deep in fill of chamber.

XVIII. **15.** Small handleless cup, like XVIII. **3, 4.** Broken and large parts missing. Ht. 0·051. Diam. *c.* 0·07. Orange clay with some grit, dominantly red in colour; surface with incipient wet-smoothing. Deep in fill of chamber.

XVIII. **16.** Small bowl. Broken but nearly complete. Ht. *c.* 0·046. Diam. 0·075. Very thick walled. Soft orange clay. Deep in fill of chamber.

XVIII. **17.** Small bowl (FIG. 31). Ht. *c.* 0·048. Diam. *c.* 0·09. Concentric string-marks on base. Orange clay. Deep in fill of chamber.

XVIII. **18.** As XVIII. **17,** but Ht. *c.* 0·045. Diam. 0·08/9. Deep in fill of chamber.

XVIII. **19.** Small bowl. As XVIII. **17, 18,** but Ht. 0·046. Diam. 0·09. Spiral fluting from fast wheel on the inside, but straight string-marks on base. Orange clay with the surface wet-smoothed. Trial south of tomb XV at depth 1·50 m.

XVIII. **20.** Small handleless cup, like XVIII. **3, 4** (FIG. 36, PLATE 58*b*). Complete except for part of rim. Ht. 0·035. Diam. 0·04. Orange clay. Fill of chamber.

XVIII. **21.** Miniature vase, or lid (FIG. 36, PLATE 58*b*). About half missing. Diam. estimated *c.* 0·035. Ht. 0·018. Orange clay. Fill of chamber.

XVIII. **22.** Sherd from the shoulder of a jar, broken just below the neck, with elaborate relief decoration of barley or corn ears (FIG. 36, PLATE 58*b–c*). W. 0·085. Ht. 0·06. Orange clay with a rather poor purplish-brown wash, which has largely disappeared. Deep in fill of chamber.

Similar 'barley sprays' in relief are assigned by Evans to M.M. IIIA (*PM* i. 414, fig. 299*a, b*).

XVIII. **23.** Fragment of ? crucible with bronze adhering to it (FIG. 36, PLATE 60*a*). Orange clay. The vase 0·015 thick, the metal *c.* 2–5 mm. thick. Deep in fill of chamber.

XVIII. **24.** Fragment of upper part of stone jug with trefoil mouth (FIG. 36, PLATE 60*d*). White marble. Ht. 0·035. W. *c.* 0·035. The bottom edge of the fragment is worked, not broken, showing that the jug was made in two separate pieces, an upper and lower, afterwards fitted together. Surface fill above chamber.

XVIII. **25.** Rim of large stone vase (FIG. 36). Rather hard grey ? limestone. Ht. 0·062. W. 0·056. Deep in fill of chamber.

XVIII. **26.** Rim of large stone vase (FIG. 36). Grey steatite. Ht. 0·048. W. 0·043. Fill of chamber.

XVIII. **27.** Lid of stone vase (FIG. 36). Grey stone banded with white. Broken, and large parts missing. Diam. 0·06. Fill of chamber.

XVIII. **28.** Lid of stone vase (FIG. 36). Fragment, 0·035 × 0·025. White ? steatite with delicate wavy streaks of black. Deep in fill of chamber.

XVIII. **29.** Fragment of stone lamp. Grey steatite. W. 0·085. Fill above chamber.

XVIII. **30.** Head of a figurine, presumably female, wearing a flat-topped head-dress, concave in the centre (FIG. 37, PLATE 58*b*). Crudely modelled, coarse buff clay with large lumps of grit; no trace of painted decoration if it ever existed. Ht. 0·035. Deep in fill of chamber.

The head-dress is interesting for its similarity to the polos crown of Mycenaean figurines of L.H. III.

XVIII. **31.** Trunk of a figurine, sex not certain, apparently holding an object in each arm (FIG. 37, PLATE 58*b*). Head and part of the base missing. Ht. as preserved 0·052. Solid except for a hollow base. Orange clay with a poor black wash. Deep in fill of chamber.

XVIII. **32.** Trunk of a figurine, like XVIII. **31** (FIG. 37, PLATE 58*b*). Head, arms, and part of base missing. Ht. as preserved 0·04. Hollow base. Orange clay. Deep in fill of chamber.

XVIII. **33.** Horn, presumably from figurine of bull PLATE 58*b*). L. as preserved 0·07. Orange clay with traces of black wash. Deep in fill of chamber.

XVIII. **34.** Figurine of animal, perhaps a bull or cow, like M. **5.** Head and rear part missing. L. as preserved 0·05. Fill of chamber.

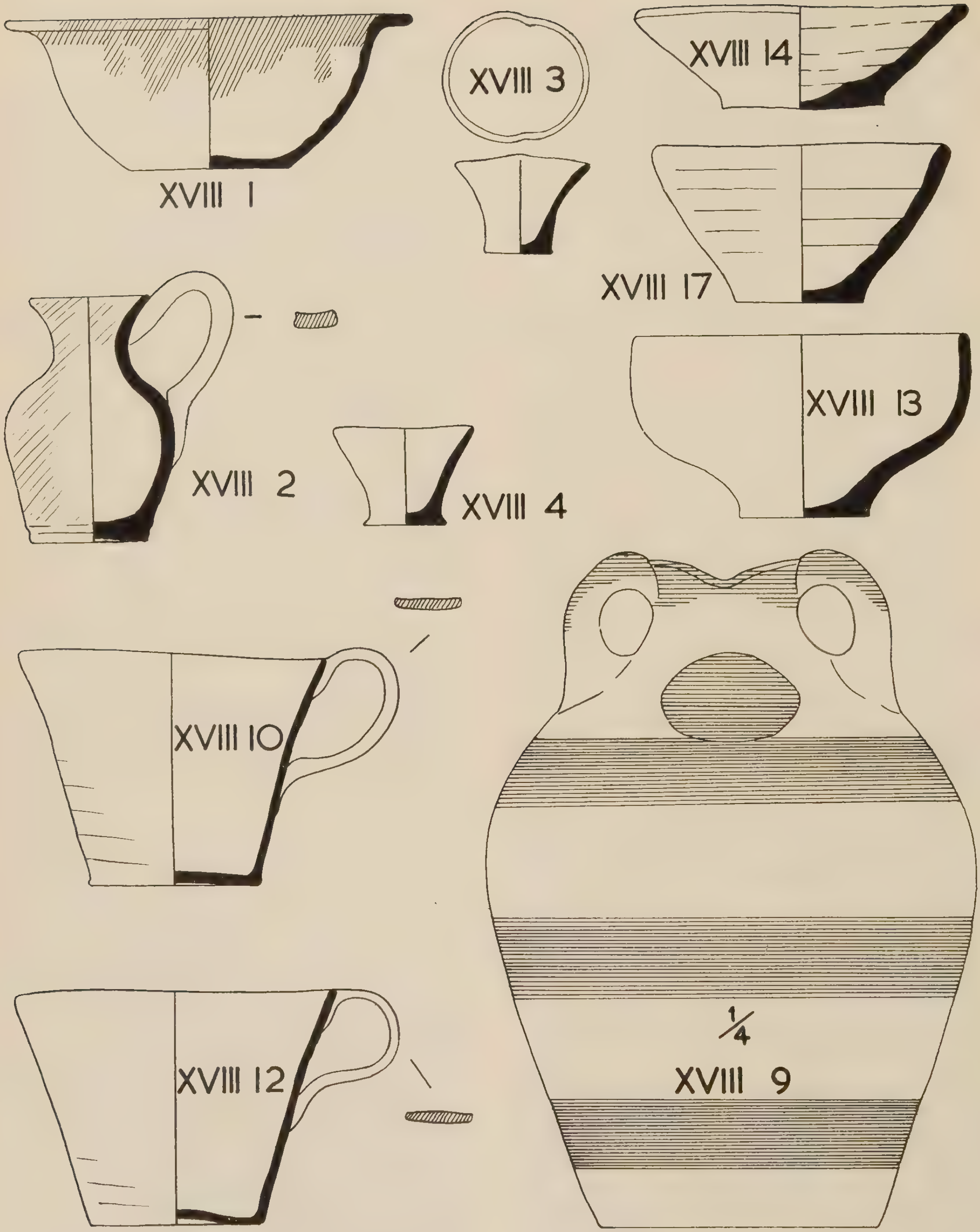

XVIII 1
XVIII 3
XVIII 14
XVIII 17
XVIII 2
XVIII 4
XVIII 13
XVIII 10
XVIII 12
1/4
XVIII 9

Fig. 31. Vases. Tomb XVIII (1:2)

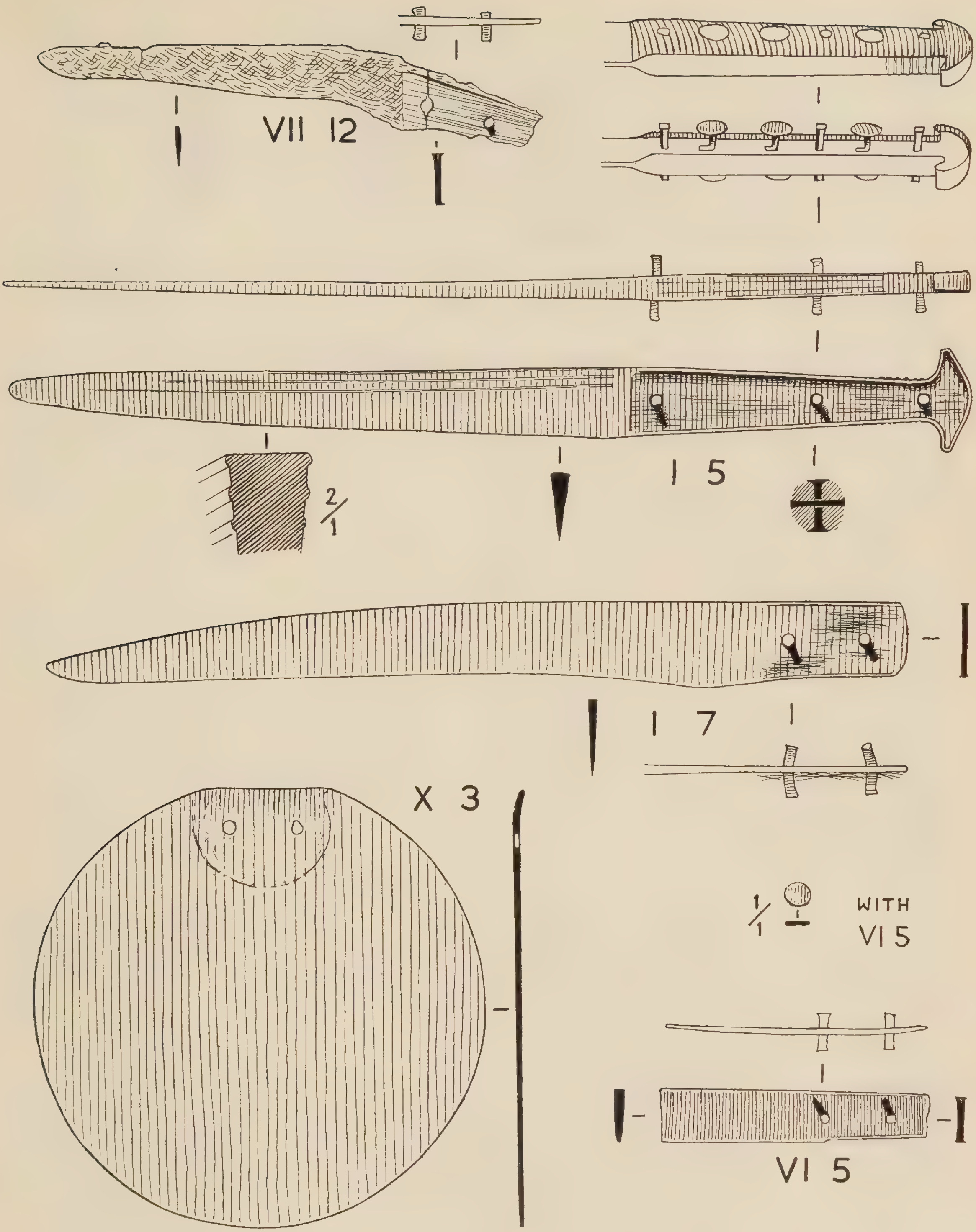

VII 12
I 5
2/1
I 7
X 3
1/1
WITH
VI 5
VI 5

Fig. 32. Bronze and iron knives, etc. (1:2)

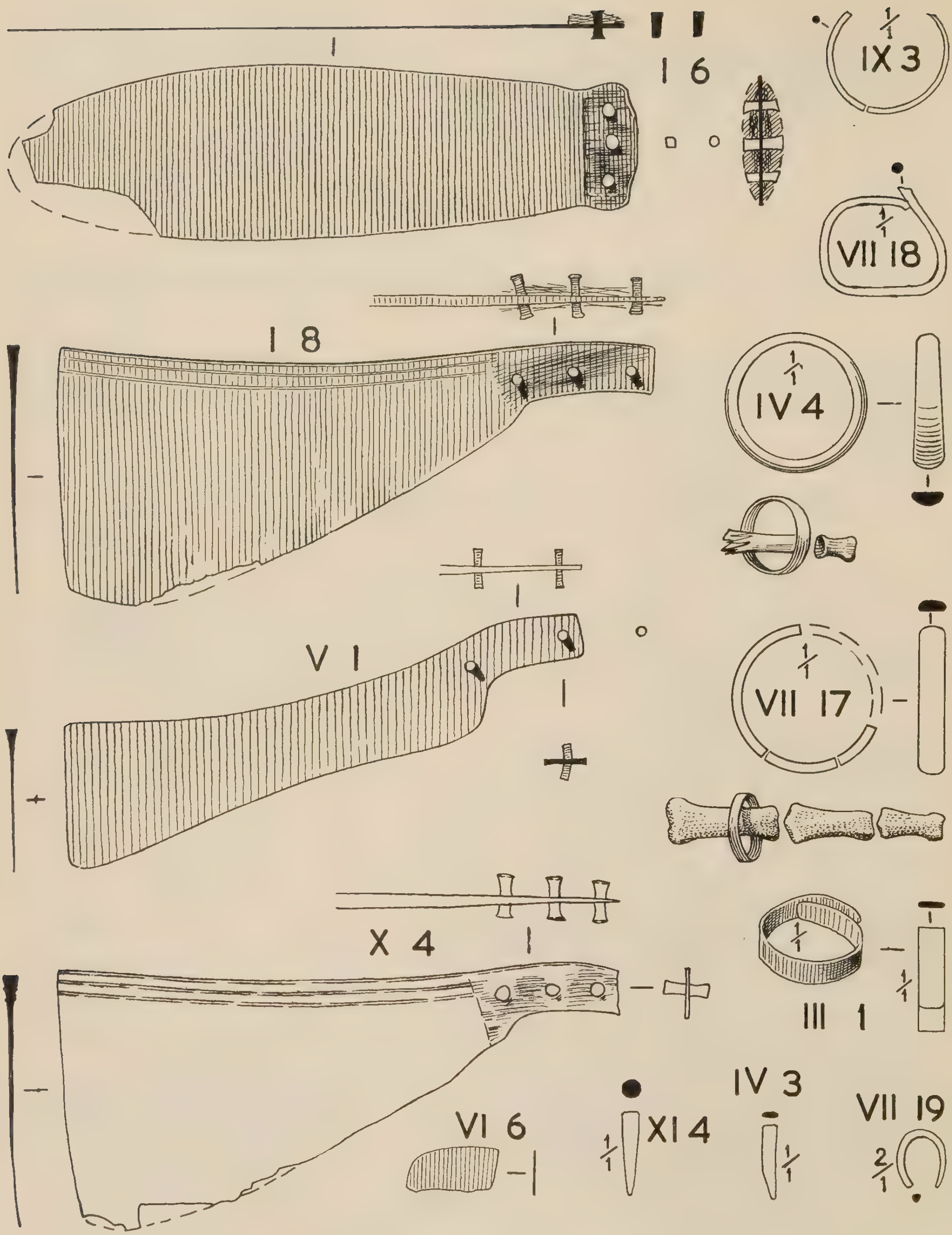

I 6
IX 3
1/1
VII 18
1/1
I 8
IV 4
1/1
V 1
VII 17
1/1
X 4
III 1
1/1
1/1
VI 6
X 14
1/1
IV 3
1/1
VII 19
2/1

Fig. 33. Bronze razors and rings (VII, **19**, 2:1, others 1:2 or 1:1)

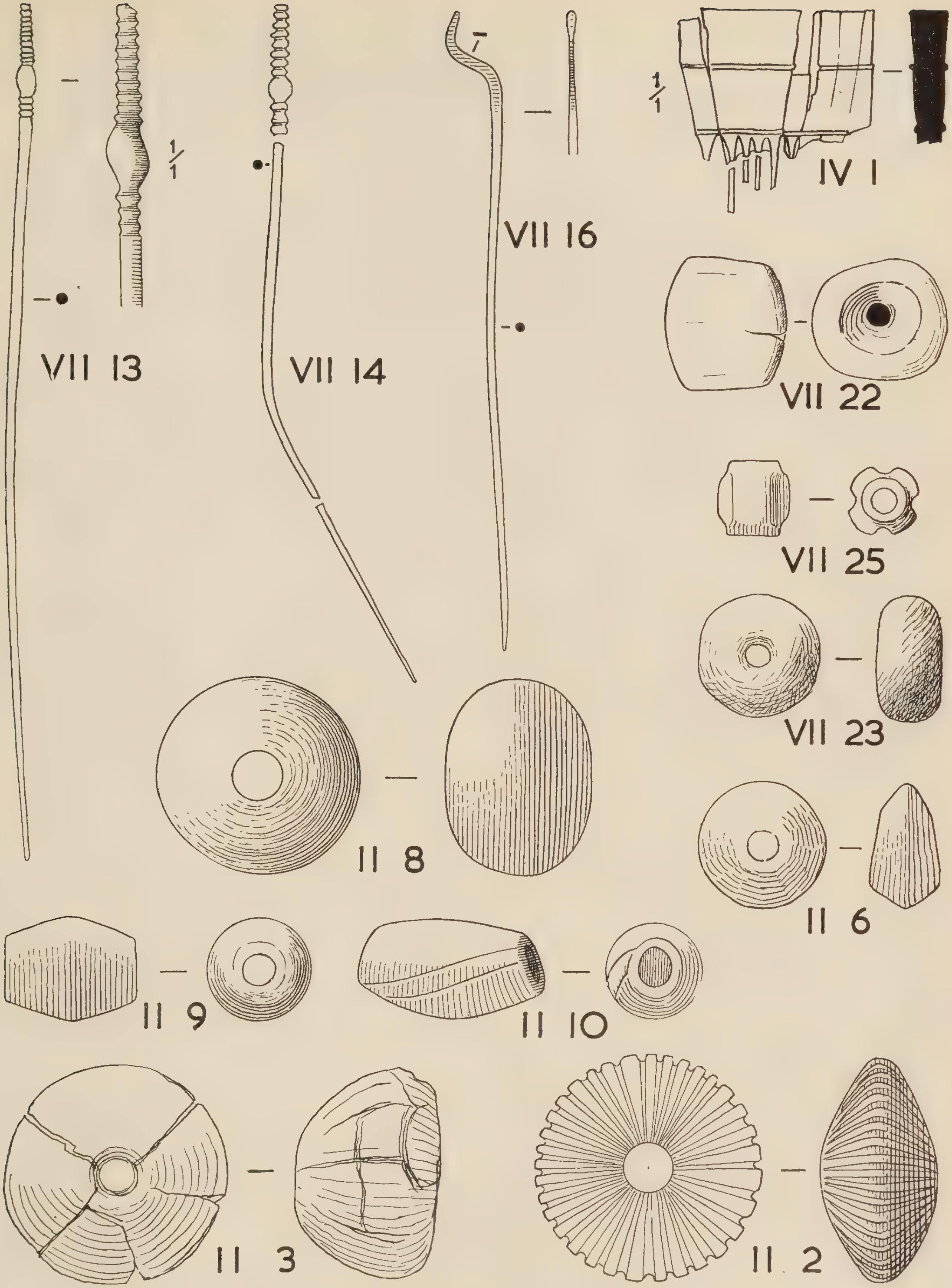

1/1
VII 13
VII 14
VII 16
1/1
IV 1
VII 22
VII 25
VII 23
II 8
II 6
II 9
II 10
II 3
II 2

FIG. 34. PINS (1 : 2), BEADS (2 : 1), IVORY COMB IV 1 (1 : 1)

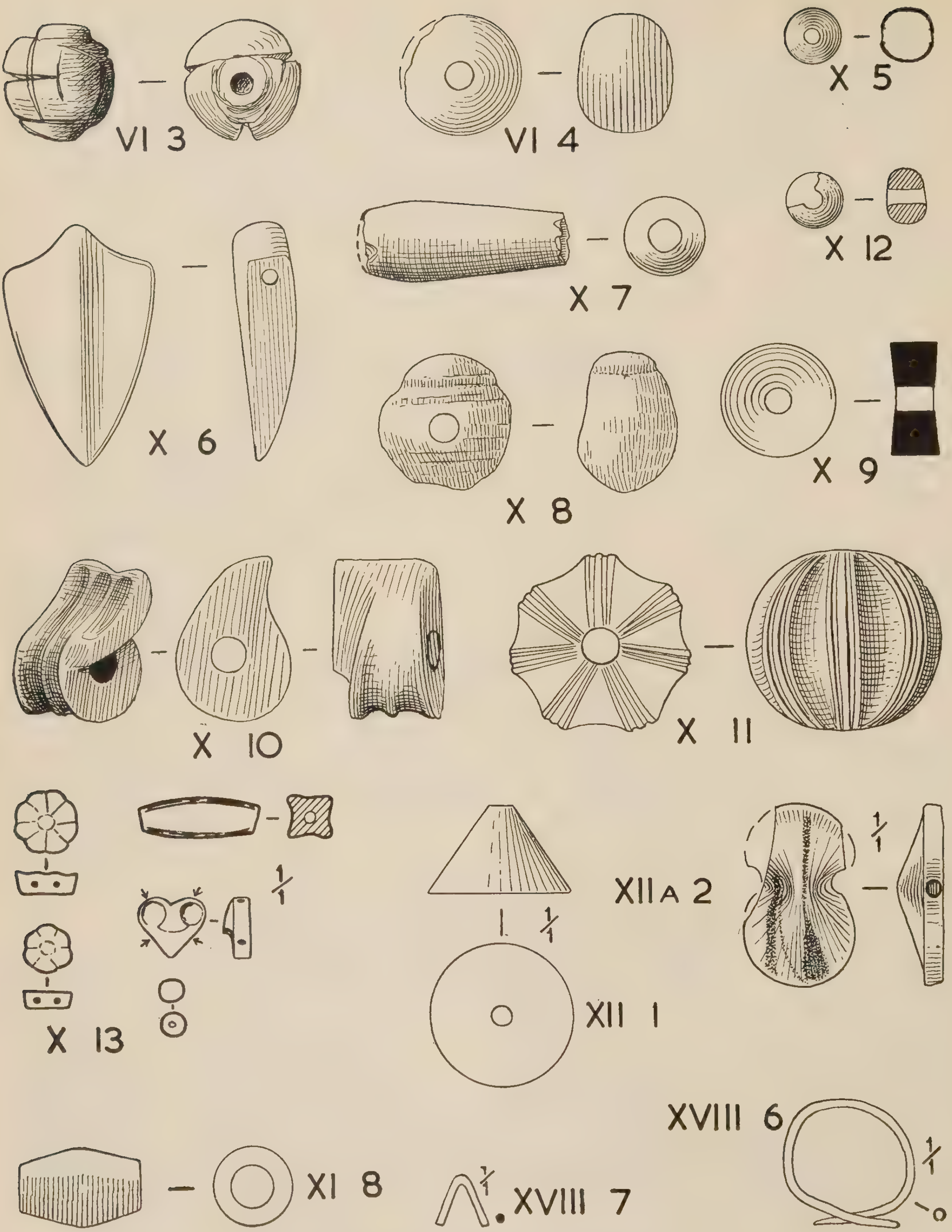

VI 3
VI 4
X 5
X 12
X 7
X 6
X 8
X 9
X 10
X 11
1/1
X 13
1/1
XII A 2
1/1
1/1
XII 1
XVIII 6
1/1
XI 8
1/1
XVIII 7

Fig. 35. Beads (2 : 1 unless otherwise stated)

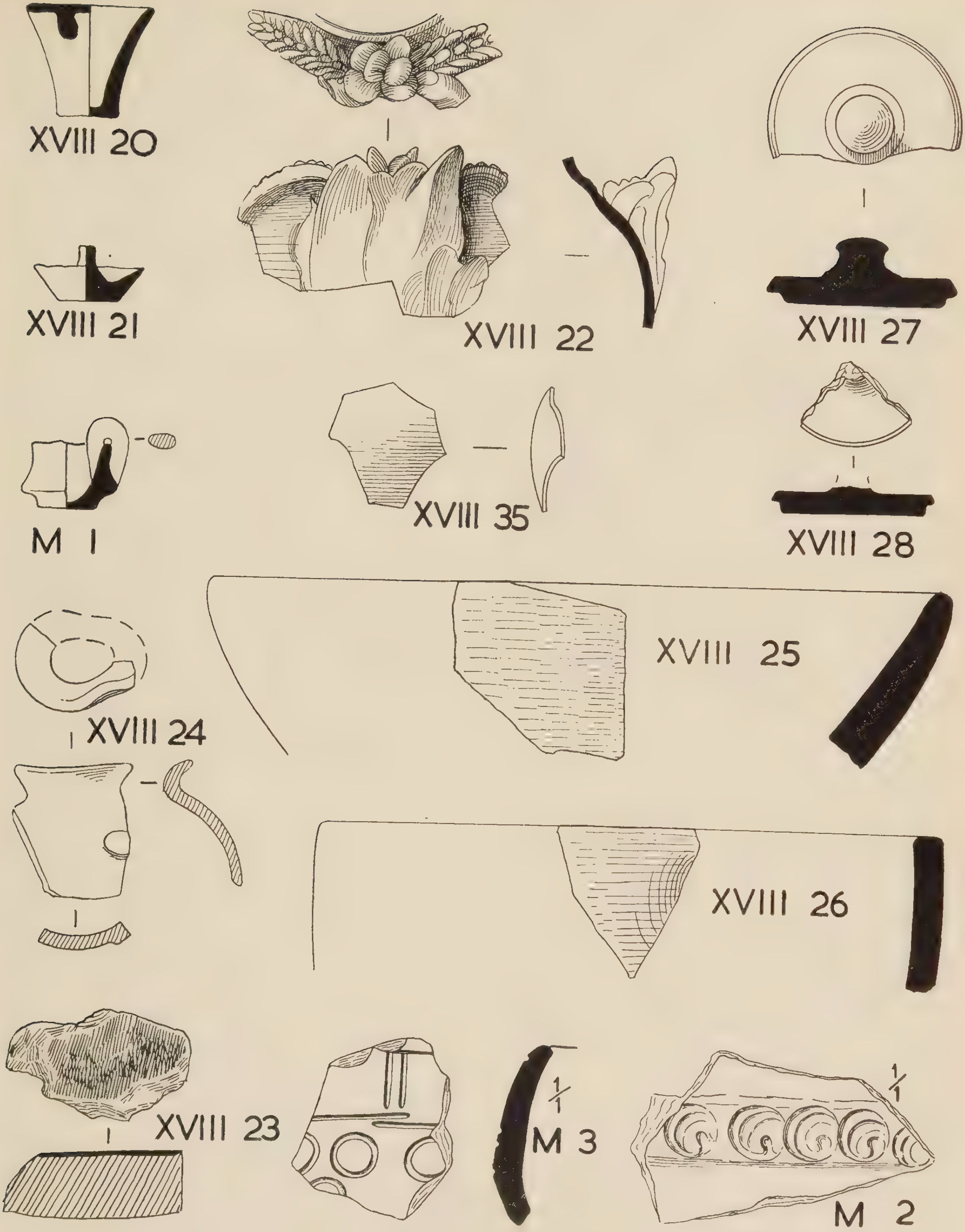

XVIII 20
XVIII 21
XVIII 22
XVIII 27
M 1
XVIII 35
XVIII 28
XVIII 25
XVIII 24
XVIII 26
XVIII 23
M 3
1/1
1/1
M 2

Fig. 36. Vases, etc., Tomb XVIII (1:2 unless otherwise stated)

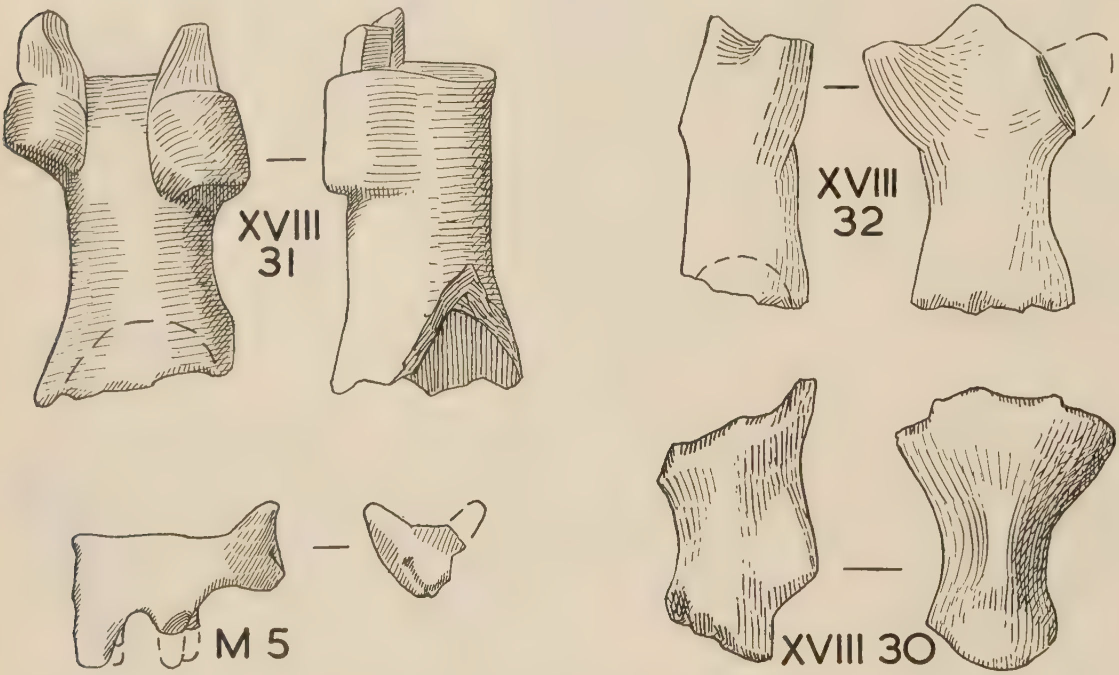


Fig. 37. Middle Minoan terracotta figurines (1:1)

XVIII. **35.** Fragment of an ostrich egg. (fig. 36, plate 60*d*). 0·038×0·037, thickness 1–2 mm. Deep in fill of chamber.

Ostrich eggs were being imported into Crete as early as the beginning of the Middle Minoan period, to judge from a piece of one found in an E.M. III context at Palaikastro (*BSA* x. 202). Evans (*PM* ii. 223 f.) noted that a class of clay ritual vases in Crete from M.M. II onwards were imitating ostrich egg rhytons, of which actual examples of a later period have been recovered from the Shaft-graves at Mycenae (*SG* pls. cxli, cxlii) and the tholos tomb at Dendra (*RTs* 37, pl. iii). Fragments of an ostrich egg, presumably of Minoan date, were found by Hutchinson in trials on the Isopata ridge (Knossos Survey **151**).

M. **1.** Miniature handled cup (fig. 36, plate 58*b*). Broken, but nearly complete. Diam. 0·03. Ht. to top of rim 0·02. Orange clay, the surface much worn. Trial SE of tomb VII. Evidently Middle Minoan.

M. 2. Sherd with row of seal impressions (fig. 36, plates 58*b*, 62). W. 0·047. Ht. 0·028. Soft fabric, reddish clay, with a buff surface on the outside. Abundant rather large grit showing in the surface. The seal impressions are along a raised band, and appear to be made by a bead-seal (diam. *c.* 9 mm.) bearing a whirligig design. Trial north of tomb II. Presumably Middle Minoan.

M. **3.** Rim of vase (fig. 36). Ht. 0·029. W. 0·025. Fine rather sandy clay, brown in the core, brick-red at the edges; the surface fine light brown, burnished inside and outside; bold incised decoration of lines and circles. Trial north of tomb II. Possibly Early Minoan?

M. **4.** Lump of Lapis Lacedaemonius. L. 0·05. Surface above tomb V.

This very distinctive hard dark-green stone with lighter green maggots, found in a raw state only at Krokeai in south Laconia, appears to have been much in favour at Knossos in the early part of the Late Bronze Age, and a store-room full of large lumps of it belonging to the last period of the Palace (LM. II) came from the Domestic Quarter (*PM* iii. 268 f.). It seems to be depicted, or rather a fresco imitation of it is depicted, in miniature frescoes showing the façades of buildings found below the floor of Magazine XIII, and assigned by Evans to M.M. III (*PM* i. 445, fig. 321). A fine bowl of this stone from the Isopata Royal Tomb Evans regards as an heirloom and the earliest example of the use of the material for vases (*PM* iii. 270, fig. 182). There are several sealstones of this material from Crete (*PM* iii. 316 and iv. 587, from the Psychro cave; iv. 467 from Kydonia, now in the Benaki Museum; iv. 560 from Central Crete, and several others in Heraklion Museum), and others from the Mainland (two or three from Mycenae, and others from Midea (Dendra), in Athens, National Mus. Those from Midea appear to be the three from the tholos tomb described as 'jadeite' (*RTs* 32–33, no. 3 *d–f*). For vases and unworked lumps of this stone at Mycenae, see *BSA* l. 182 and pl. 23.

M. **5**. Figurine of ? bull or cow (FIG. 37, PLATE 58*b*). Three legs and one horn missing. L. 0·03. Orange clay. Surface near tomb XIIa. Middle Minoan.

Such figurines are commonly found in sanctuaries of the Middle Minoan period (see Platon in *KCh* 5 (1951) 96–160 *passim*).

M. **6**. Head of figurine of ? bull or cow (PLATE 58*b*). L. 0·02. Orange clay with a black lustrous wash. Deep in trial about 25 metres north of tombs XVIII and XIX. Clearly Middle Minoan.

M. **7**. Fragment of bronze, possibly the bow of a fibula (PLATE 60*a*). Much corroded. L. 0·033. Trial south of tomb VIII at depth *c.* 1·50 m.

SINCLAIR HOOD
GEORGE HUXLEY
NANCY SANDARS

APPENDIX

Report on Amber Beads from Aegean Sites

The amber beads were examined with a view to determining the origin of the amber—in particular to distinguish between Prussian and Sicilian amber. The samples were compared with specimens of Prussian and Sicilian amber of authenticated origin as controls.

A. Appearance under ultra-violet light

All the samples and the controls showed the same superficial dull-yellow fluorescence except samples 1 and 6, which were darkish brown in colour. When a fresh surface was exposed by removal of the outer brittle crust, all samples showed a greyish-blue fluorescence. Finally, when the samples (with the exception of no. 6) were cut in half, the central areas showed a milky white fluorescence. This area was particularly prominent in the case of the Sicilian sample, in which the greyish-blue fluorescence was confined to a very thin zone.

The phenomena observed in the case both of samples and of the control specimens were so similar that no conclusions could be drawn about the origin of the amber beads.

B. Detection of succinic acid

According to the literature, true Prussian amber is characterized by the fact that when it is heated succinic acid is evolved, whereas this acid is not a normal constituent of Sicilian amber; although, according to some authors, it may be present in small amounts. The amount of succinic acid in Prussian amber is also known to vary in different specimens. Tests for the presence of succinic acid were therefore carried out on a microchemical scale, and the following results were obtained:

Sample no.	*Description of sample*	*Result of test*
1	Epano Englianos tholos, Pylos, 1953: fragments from '89' and from '94'	Positive
2	Kato Phana, Chios	Slight positive
3	Vardari, Salonica, no. 767	Negative
4	Arvi, Amira, Crete. AE 316, Ash.	Slight positive
5	Thisbe 1938, 526, Ash.	Positive
6	Capua, Italy, Ash.	Negative

In carrying out the above test it was noticed that sample no. 6 did not behave in a typical manner; the fumes evolved in heating were much less and no sublimate was formed.

Conclusions

Sample no. 6 shows reactions which would appear to set it apart from the other samples, which all behaved in a similar manner. The negative result of the succinic acid test in the case of sample no. 3 cannot be regarded as indicating the absence of succinic acid. Owing to the small amount of material available for testing, the microchemical reaction was being carried out near the limit of its sensitivity, and a negative result may be taken as showing that the amount of succinic acid is lower in this particular specimen.

It may, therefore, be tentatively suggested that, with the exception of sample no. 6, the amber in the beads is of Prussian origin.

A. E. WERNER

Research Laboratory, British Museum

SUB-MARINE EXPLORATION IN CRETE, 1955

(PLATES 63–65)

IN 1955 it was decided to transfer the School's undersea activity from Chios to Crete during the time that excavations on land were being continued at Knossos. The Greek Ministry of Education most generously granted permission for the School to carry on diving operations at selected points off the coast of Crete in co-operation with the Ephor of Antiquities, Dr. Nicolas Platon.

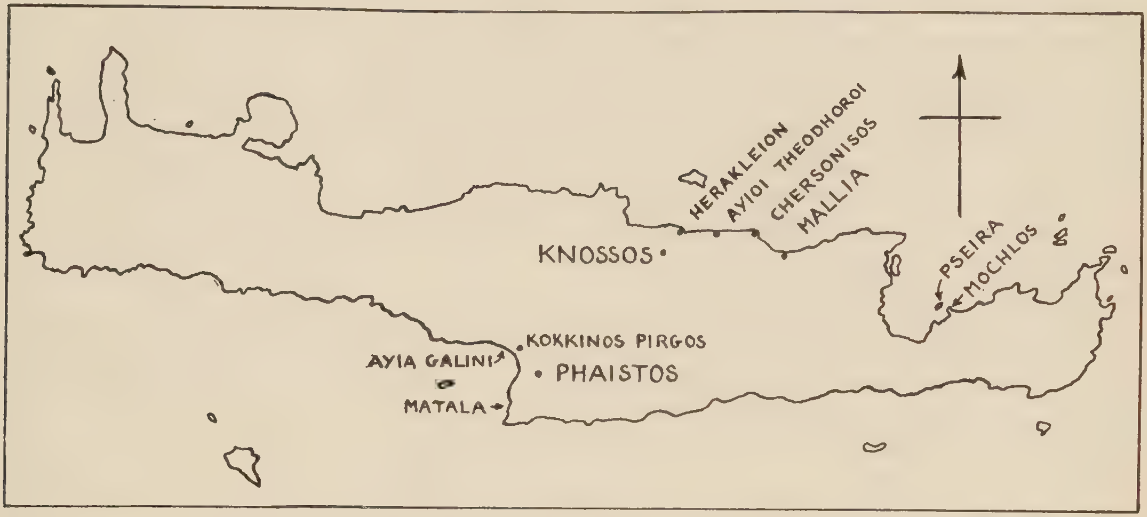


FIG. 1. CRETE, SHOWING AREA IN WHICH WORK WAS DONE

The campaign lasted three weeks, from August 9th to 30th, with a party of ten volunteers under the leadership of John Leatham. The sites explored were chosen by Dr. Platon, who gave the party much of his time and interest, and made repeated visits to the places where they were working. The party had its headquarters in an empty house which belonged to the School's foreman, Manoli Markoyiannakis, conveniently situated upon the main road in the suburb of Poros (Katsamba) just east of Herakleion. This was used as a central depot, and the compressor

Acknowledgements

The School is very much indebted to Professor Sp. Marinatos, then Head of the Department of Antiquities, and to the Greek Ministry of Education, which generously granted permission for the diving; also to the Ephor of Antiquities for Crete, Dr. Nicolas Platon, for his able guidance and help in connexion with it.

The School would like once again to express its gratitude to the *Sunday Times* for the gift of £1,000 by means of which the basic equipment of compressor and aqualungs was bought in 1954; and to the British Academy and to the Royal Geographical Society for grants which made it possible to continue the work this season.

Those who took part in the expedition were: Ley Kenyon, Richard Mitchell, Igor Pavloff-Melanophides, Raef Payne, Susan Chomley, Honor Frost, Regine Lugo (now Mrs. Pavloff-Melanophides), Alison Marsh (now Mrs. Myles Stoney), Ann Pearce (now Mrs. Joseph Natanson). To all of them we should like to express our gratitude for their help and co-operation throughout the work. The plans, notably that of Chersonisos harbour, are basically the work of Mr. John Carswell; the drawings of the pottery are by Mrs. Myles Stoney.

The observations at Chersonisos were checked and revised in some details by Sinclair Hood with the help of George Huxley and Davina Best (now Mrs. Huxley) under exceptionally favourable conditions of calm weather in the autumn of 1956.

for filling the aqualungs was established here. The work was unfortunately hampered throughout the three weeks by high seas owing to the prevailing north winds (Meltemia). It was difficult therefore to make great use of the aqualungs.

A day or two was first spent examining the waters of Herakleion harbour itself, in the hope of finding some trace of boats sunk there during the great siege by the Turks in the late seventeenth century. Two bronze cannon and charred timbers from a galley of the period were dredged from a depth of 4 metres in the harbour just before the war.[1] But the water was excessively cloudy, making it difficult to see, and no results were obtained. The sea around the mouth of the Kairatos stream and off Katsamba point, the area of the Minoan harbour town of Knossos just east of Herakleion, was also investigated, but without result.

The party then, at Dr. Platon's suggestion, moved to Chersonisos, where the main effort of the season was made. The traces of Roman and possibly earlier harbour works there were planned and studied. At the same time an examination was made of the waters around the Minoan settlements on the islands of Mochlos and Pseira in the Gulf of Mirabello; and several vases of Early and Middle Minoan types were recovered from the depths of the sea in that area. Then, once more at Dr. Platon's invitation, the party made an attempt to locate the wreck of the Classical Period noted before the war in the bay of Ayia Galini on the north edge of the Mesara plain in south Crete. The neighbouring ancient harbours of Komo and Metalla on the south coast were also visited.

Professor Marinatos most kindly gave permission for us to examine the interesting traces of possible Minoan harbour works to which he has drawn attention at Ayioi Theodhoroi[2] just west of Nirou Khani between Herakleion and Mallia on the north coast. But rough weather and high winds severely curtailed investigations here.

FISH-TANKS (see pp. 270 and 275)

A curious discovery at Chersonisos and Mochlos was that of rock-cut compartments, which appear to be tanks for conserving sea-fish according to the description of these given by the Roman agricultural writers, Columella and Varro.[3]

The ancient Greeks evidently had artificial tanks for keeping freshwater fish. In the fifth century B.C. the people of Agrigentum in Sicily constructed for the tyrant Gelo a huge tank (κολυμβήθρα), nearly 1,300 metres round and over 9 metres deep.[4] Plato also talks of a man falling into a little κολυμβήθρα or into the sea;[5] but this κολυμβήθρα is not necessarily a fish-tank.

The Romans seem to have followed the Greeks in making tanks for conserving freshwater fish. But during the last phase of the Roman Republic in the first century B.C. a rage developed for sea-fish, and many anecdotes are told of the lengths to which people went to indulge their passion for this form of food. At first at any rate some attempts appear to have been made to establish sea-fish in fresh water; but tanks built by the sea allowing a constant flow of sea-water through them eventually became the rule. An incidental reference in Pliny makes it clear that tanks for sea-fish existed by his time at the opposite ends of the Mediterranean, in Phoenicia and at Narbonne in south France.[6] There is therefore nothing improbable in the discovery of such tanks in Crete.

---

[1] Ἐπετήρις Ἑτ. Κρητικῶν Σπουδῶν 2 (1939) 536.

[2] See his account in *PAE* 1926, 141 f.

[3] Columella viii. 16–17; Varro iii. 17. See also other references in *DA*, s.v. Vivarium; *RE*, s.v. Piscina.

[4] Diodorus xi. 25, 4.

[5] *Republic* 453d.

[6] Pliny, *HN* ix. 59.

Columella recommends the construction of tanks for sea-fish to owners of islands or of poor estates by the sea.[7] But both the tanks at Chersonisos and those at Mochlos doubtless belonged to somebody living in the towns there.

The tanks are grouped in a pair at Mochlos, and there are three in a row at Chersonisos, evidently to keep different kinds of fish apart. 'Who, however, goes in for fish-ponds and does not have a row of them?' says Varro: 'for just as painters have large boxes with compartments for keeping their pigments of different colours, so they have ponds with compartments for keeping the varieties of fish separate' (iii. 17, 3). The tanks were fed by channels cut in the rock. One tank at Mochlos, and all those at Chersonisos, have at least two channels, or even three. This accords with the advice of the agricultural writers that the chief concern in building a tank for sea-fish must be to ensure a constant flow and circulation of fresh water.[8] The tank must imitate as far as possible the condition of the sea itself, says Columella (viii. 17, 1). There should therefore, if possible, be channels on every side, and (ideally) an outlet opposite the inlet channel to carry the water away as the wave forces itself into the tank through the inlet (ibid. 17, 3). This is precisely the arrangement visible in the tanks at Chersonisos.

The channels must obviously have had grills or gratings of some kind to prevent the fish escaping, while admitting a constant supply of fresh sea-water.[9] A fragment of a stone slab with regular perforations found in the eastern tank at Mochlos (p. 275, PLATE 63 *a*) must be part of such a grating from one of the channels.

The floors of the tanks at Mochlos are about 1·50, and at Chersonisos between 1·95 and 2·20, below the modern sea-level. It is clear that the sea-level has risen considerably in these parts of Crete since ancient times (see below). At Chersonisos, for instance, the original surface of the Roman mole (A) is flush with the sea-level today. If, therefore, the mole originally stood to a height of a metre above the level of the sea in Roman times, the fish-tanks at Chersonisos would have had a depth of about a metre of water in them.

In discussing various kinds of fish-tanks for different kinds of fish, Columella speaks of tanks with only about 2 Roman feet (say 0·60 m.) depth of water (viii. 17, 9); these, however, are not tanks cut in the rock, but ponds built in sandy shallows especially for flatfish like soles or turbots. Our tanks, it would appear, were rather intended for rock-fish, and tanks for these, according to Columella, should be some 7 feet, or over 2 metres, deep. The greater the depth the better, he says, as the water is then colder, and this is more healthy for the fish (viii. 17, 3–4). But it is not surprising to find ideal specifications ignored in practice, least of all in a provincial area like Crete.

Rise of Sea-level

All the evidence points to a slight general rise of sea-level throughout the Mediterranean since early historic times. But this rise may not have progressed at a uniform rate, and there may even have been periods of oscillation when the sea-level fell again to some extent.[10] In a region of great earthquake activity like Crete the picture is further complicated by the possibility of localized earth movements. The idea has indeed been advanced that the whole of Crete has tilted along a north–south axis, so that the west end has risen, leaving the harbour of the Roman period at Phalasarna high and dry, while the eastern part of the island has been correspondingly depressed. Pendlebury suggested that such a tilting might have taken place owing to a single great catastrophe in the early Middle Ages.[11]

---

[7] Columella viii. 16, 6. But Varro strongly disapproves of sea-fish tanks as opposed to tanks for freshwater fish. They are only built at great cost, and stocked at great cost; and the upkeep is expensive (iii. 17, 2).

[8] Q. Hortensius used to criticize M. Lucullus because the fish-tanks at his villa near Naples did not have suitable tidal currents. Whereupon Lucullus spent a fortune digging a tunnel through a mountain to bring a stream of sea-water into his fish-ponds so that they should ebb and flow (Varro iii. 17, 8).

[9] Columella (viii. 17, 6) recommends bronze gratings with small holes.

[10] There is now evidence for the phenomena of a partial regression followed by renewed transgression of the sea in England in the Middle Ages (*The Times*, Apr. 14th, 1956, p. 11).

The evidence from Mochlos and Chersonisos, however, rather suggests that the rise of the sea-level at both places since Roman times has been about the same, a metre more or less.[12] Since the floors of the fish-tanks at Mochlos are rather less deep (1·50 as opposed to about 2·00 m.) below the modern surface than those at Chersonisos, it might even be deduced that the rise at Chersonisos had been somewhat more than at Mochlos. At all events, the evidence certainly does not support a theory that Crete has tilted along a north–south axis so that the west end has risen while the east has sunk, since, if the island had tilted in this way, the sea ought to have risen higher at Mochlos, which lies nearly 50 kilometres farther east, than at Chersonisos.

Chersonisos (see Plan, fig. 2, and Key below)[13]

Key to Plan of Harbour (fig. 2)

(1) Area of squared stone blocks. Possibly remains of Greek or Hellenistic harbour works (p. 269).
(2) Roman fountain with mosaics (p. 269).
(3) Roman apse exposed in road (p. 269).
(4) Roman quay with remains of stone bollards (p. 268).
(5, 6) Ruins of Roman buildings exposed on shore (p. 269).
(7) Roman and earlier ruins exposed by shore, including possible remains of Greek or Hellenistic harbour works (p. 269).
(8, 9) Remains of Roman quay or large sea-side villa (p. 269).
(10) Wall of the Roman period or later (p. 269).
(11) Stretch of narrow concrete walling, presumably Roman (p. 269).
(12) Walling of squared and chamfered stone blocks. Possibly remains of Greek or Hellenistic harbour works (p. 270).
(13) Chapel of Ayia Paraskevi.
(14) Roman fish tanks cut in the rock (p. 270).
(15) Roman or Byzantine defence walls.
(16) Early Christian basilica church.
(17) Ancient walls, including some of the Minoan period, exposed in cliff face (p. 266).
(18) Column and masonry blocks on harbour bottom.

Chersonisos lies on the north coast of Crete about 25 kilometres east of Herakleion on the west edge of the Bay of Mallia. It was probably in ancient times the best harbour on the north coast between Herakleion and Olous farther east. At one time the sea-port of Lyttos, about 15 kilometres distant from it inland, it later became an independent city issuing its own coinage. Strabo mentions the temple of the pre-Hellenic goddess Britomartis, or Dictynna, that once stood here.

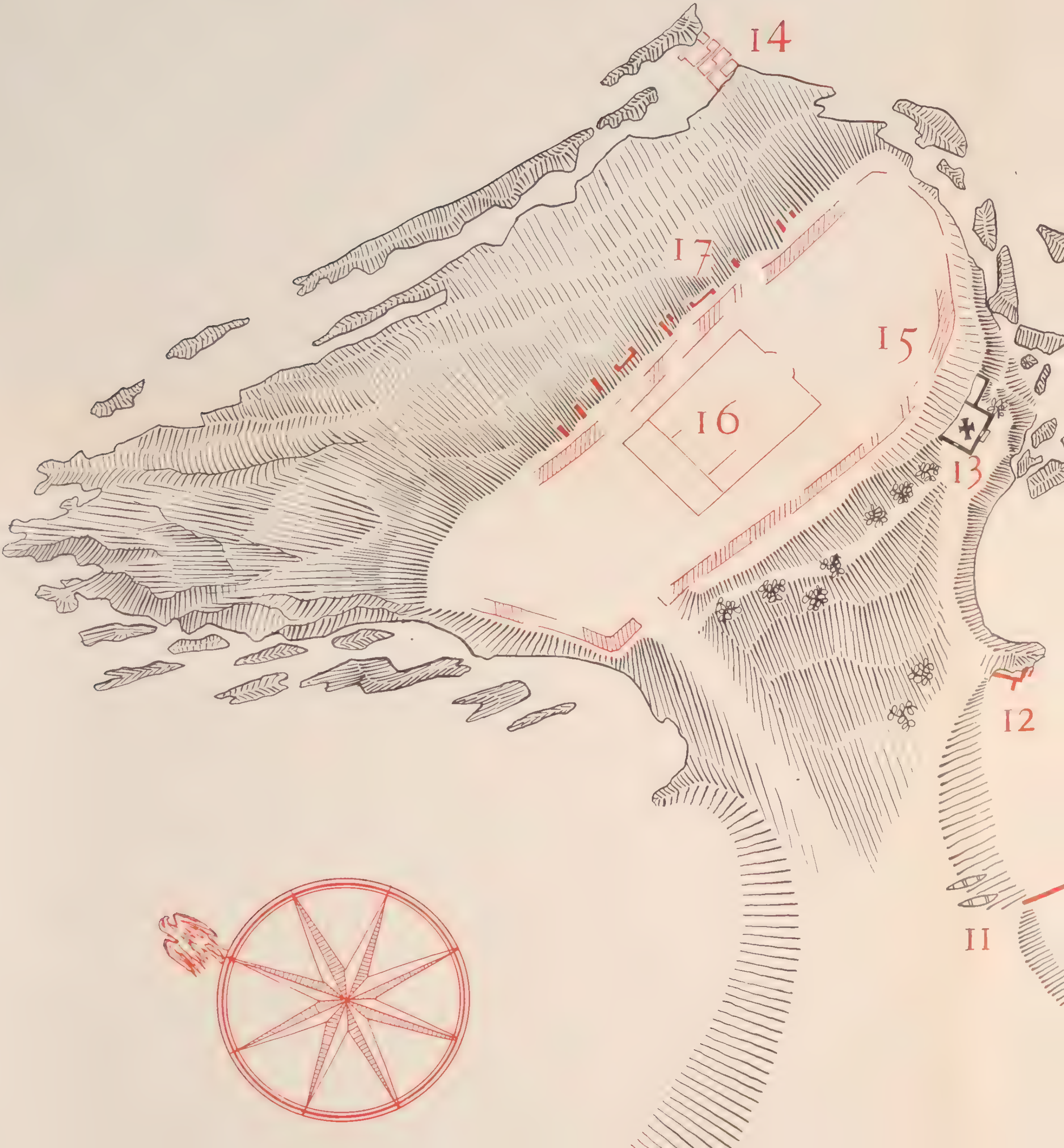
The rocky and defensible promontory (plate 64*a*) jutting into the sea, flanked by wide and sandy beaches, provided an ideal site for an early settlement. There was a town or village here in the Bronze Age, to judge from Minoan sherds among the walls of houses exposed at the bottom of an occupation deposit 6·50 m. thick in the cliff face on the north-east edge of the promontory. This headland may have formed the acropolis of Chersonisos in Classical times; but the concrete defence walls surrounding it (15 on Plan) are probably late Roman or Byzantine, and an interesting Early Christian church here (16 on Plan) has been explored by Xanthoudides

---

[11] *Archaeology of Crete* 3 and n. 1. See Spratt, *Travels and Researches in Crete* (1865) ii. 232 for Phalasarna. For an exhaustive discussion of this question of the rise of sea-level in the Mediterranean since ancient times, see now J. M. Cook, pp. 11 f., n. 13 above. Cf. Diolé, *Four Thousand Years Under the Sea* (translated by Gerard Hopkins, 1954), 283 f., Appendix A. Note that the (translated) excerpt referring to Phalasarna contains an important error of fact: the supposed ancient quays lie 18 feet *above* and not, as stated, *below* the modern sea-level.

[12] Evans (*PM* i. 298) estimates 'a subsidence of quite two metres since Roman times' at Chersonisos; but this is clearly too much.

[13] See Kirsten, *RE* Suppl. vii. 84 f.; Guarducci, *Inscriptiones Creticae* i. 33 f.


14
17
15
16
13
12
11

and again recently by Orlandos.[14] The ruins of the Roman city, including a theatre, can be seen in the fields to the south and west of the headland. These ruins cover an extensive area, and together with the considerable harbour works suggest the importance and prosperity of Chersonisos as a sea-port town in Roman times, if not earlier.

(*a*) *Roman Harbour Works*[15]

The Roman harbour was bounded on the east and south by massive concrete moles (A, B, C) (PLATE 64*c*, *d*), making a roomy and well-sheltered anchorage roughly rectangular in shape, and measuring some 270 metres long and 150 metres across. The entrance, between moles B and C, was about 90 metres wide.

In fair weather vessels probably berthed alongside the series of moles (A, B, C), which offered between them (estimating A and B together as 175 metres, C as about 165 metres long) some 330 metres of wharfage inside the harbour. The west end of B can still be traced, but the seaward (eastern) extremity of C is not certain, as this stretch of mole has been virtually destroyed.

There were also quays built along parts at least of the harbour shore (see below, p. 268). But it seems as if much of the north end of the harbour by the promontory had always been left a sandy beach where boats could be drawn on shore as now.

The sea moles (A, B, C) are tolerably well preserved, and form an impressive monument of Roman harbour engineering. They are between 5·20 and 5·30 m. wide, built of concrete and rubble, with originally perhaps a facing of small squared blocks of stone, which only survive in places near the bottom of the parts of the moles exposed above the present sea bed.

The southern mole (C) has been much shattered, as has the strip between the northern stretches A and B. This strip appears to have turned at a more or less sharp angle, and not in a gentle curve, as far as it is possible to judge from the ruins that survive. There may have been a lighthouse here on the angle where the two stretches A and B met.

The original top surface of the moles only remains in a few places, notably at the north or shoreward end of A, and again to the south of the bend in A. At these points the top of the mole is just awash, more or less flush with the level of the sea today.

On both these parts of mole A can be seen the stumps of rectangular stone bollards, running in a line down the centre of the mole. The two of these preserved near the north shoreward end of the mole are 9 metres apart. But the three visible in the south section are at intervals of about 8 metres. The bollard nearest the shore at the north end of the mole measures 0·65 m. in length (from north to south) and 0·55 m. in width.

Along the inward face of mole A are what appear to be traces of vertical recesses, at regular intervals of about 6·80 m., alternately large and small and measuring between 1·0 and 1·50 in depth from the surface of the mole and between 0·60 and 0·80 in width. Such recesses might have housed wooden steps, or stone bollards or other mooring devices like iron rings; or else they could have held large timbers standing proud of the face of the mole to prevent ships from chafing their sides against it.

When they were built the moles probably stood to a height of about a metre, more or less, above the surface of the harbour: here at least, therefore, we have good evidence for a rise in the sea-level of about a metre since Roman times. The sea here cannot have risen much more than a metre, since, apart from the extra height that this would give the moles, the bottoms of

[14] *ADelt* 1918, Par. 31; ῎Εργον τῆς ᾽Αρχ. ῾Ετ. κατὰ τὸ 1956, 118 f. Chersonisos was once the see of a bishop, and the name of the nearby village of Episkopi continues the memory of this. See Guarducci, *Inscriptiones Creticae* i. 34, for references to bishops here in Early Christian times.

[15] See Lehmann-Hartleben, 'Die antiken Hafenanlagen des Mittelmeeres', *Klio*, Beiheft xiv (1923) 252. The harbour works are there ascribed to Roman Imperial times at the earliest. Vitruvius (v. 12) has an illuminating chapter on hydraulic construction in this age.

the Roman fish-tanks (p. 270) are only some 2·00 below the modern surface, and they must obviously have been at least half a metre, and probably a good deal more, below the level of the sea at the time they were excavated.

The harbour over most of its area is now fairly shallow, with a sandy bottom, and has certainly silted a good deal since ancient times. But in the entrance between moles B and C the water reaches a depth of 6 metres. Outside the harbour on the south side of mole C the water is today between a metre and 2 metres deep, with a steep drop into what appears to be the submerged continuation of the stream bed on the south edge of the ancient city (south-west corner of Plan, fig. 2).

A flat stone measuring about 0·60 × 0·40, with a hole pierced through its centre, was seen lying in deep water at the foot of this steep bank, and may be an ancient anchor.[16] A similar pierced stone was also noted at Ayioi Theodhoroi.

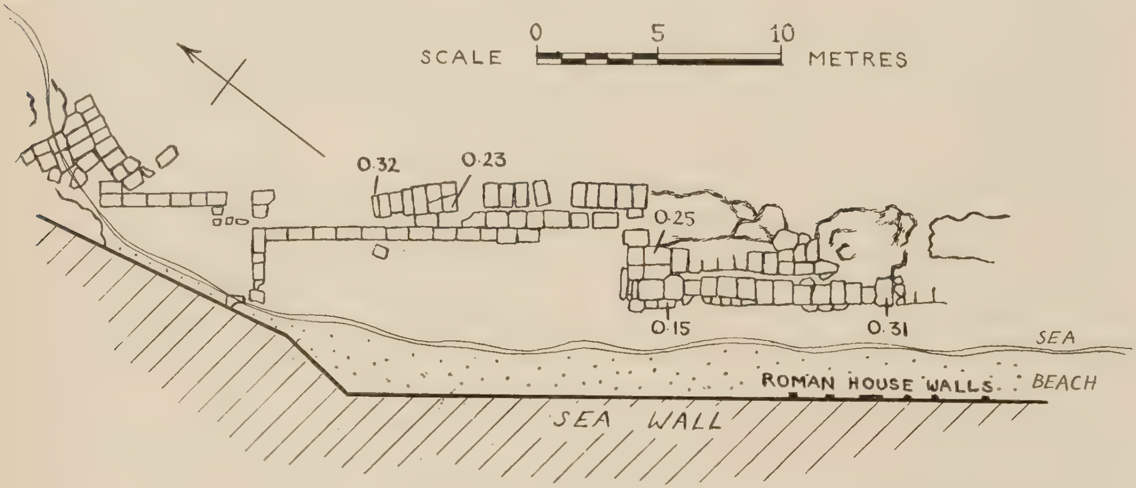


Fig. 3. Area of squared blocks at 1 on plan, fig. 2
(Figures give depths of tops of blocks below modern sea-level.)

(*b*) *Quays and other remains of the Roman Period along the Shore on the west side of the Harbour*

What seems to be a stretch of quay is preserved in the south-west corner of the harbour and is traceable running for a distance of about 60 metres or more northwards from what may be the beginning of mole C (4 on Plan, fig. 2). This quay is constructed of concrete like the moles, and it is about 2·70 across at its widest point, standing to a maximum height of over 0·65 above the modern sea-level. That is to say, its top was a good half metre or more higher above the harbour level than the tops of the moles.

Only the southern 30 metres of the quay now survive above sea-level. This stretch is in two sections, of which the longer (northern) part has a line of three rectangular bollards near the east or seaward edge, the bollards being about 0·50 long (from north to south) and 0·45 wide, with intervals of 8·30 and 8·55 m. between them. The shorter (southern) section of quay surviving above sea-level is separated by a gap of 2·20 m. from what appears to be the beginning of mole C.

This last consists of a stretch of concrete running for *c.* 15 metres eastwards, with the top just awash like the tops of the other moles. But only a width of 2·60 is now visible, whereas the other moles are *c.* 5·30 wide; it may originally have had a greater width, and the remaining part may have been destroyed, or the top of it destroyed and the rest buried in sand. At its eastern end this possible section of mole terminates abruptly, but in a rough face; the water where it ends is only 1·80 deep, with a sandy bottom which may hide traces of a continuation. What is visible certainly seems to run more or less in line with the surviving section of mole C, which begins about 100 metres to the east.

---

[16] Diolé, *Four Thousand Years Under the Sea* 298, Appendix C.

Another series of walls, evidently Roman, projects into the harbour farther to the north (7–9 on Plan). At 7 is a brick wall; while at 8 beyond it a stretch of concrete walling, which rises to a maximum height of 0·75 above present sea-level, might be remains of a quay like that at 4. But this complex is more likely perhaps to be part of the ruins of a large sea-side villa.

To some great villa presumably belongs the interesting mosaic-adorned fountain (2 on Plan).[17] The four sides of the low pyramid, from the centre of which the water flowed, are appropriately adorned with pictures of sea-fishing and boating. An apse (3 on Plan) visible in the surface of the modern road just to the north of the fountain, and walls of brick and concrete exposed in the high bank forming the west boundary to the beach beyond it as far as 5 and 6 on the Plan, may also belong to this or to some other large house extending to the water's edge.

At 11 at the north end of the harbour, where the beach curves round to the east, a solitary stretch of concrete wall 0·60 wide is visible running from the bank at the edge of the beach into the sea, and can be followed for a distance of over 10 metres from the shore. It may be the remains of a small Roman pier or jetty, or simply a garden wall, seeing that the sea-level has risen as much as a metre here since Roman times.

(*c*) *Breakwaters*

Outside the moles, on the east of A and the south of B and C, run breakwaters of huge rough boulders. The tops of these breakwaters are now submerged, except for a short stretch opposite the bend in mole A and an isolated piece south of C, which rise above the modern sea level. The line of the breakwater outside mole A is particularly easy to trace. It does not run exactly parallel to the mole, and opposite the midway stretch of the mole there is quite a space between mole and breakwater. It is therefore not impossible that the breakwater belongs in fact to an earlier period than the moles. Chersonisos was certainly an important harbour long before the Roman period, and at one or two points along the shore indications of what may be harbour works of earlier times can be observed.

(*d*) *Earlier Harbour Works*

These possible traces of earlier harbour works consist of structures built of carefully squared blocks fitted together without cement, which may be remains of quays of Hellenistic or earlier Classical times.

The most extensive of these remains are to be seen in shallow water by the shore just outside the south limits of the Roman harbour, between it and the stream bed (1 on Plan, FIG. 2 and FIG. 3). The tops of large blocks, measuring over a metre long and half a metre wide, are, or were in the summer of 1955, exposed here for a distance of some 40 metres just below the surface at the edge of the shore. These may be relics, perhaps the top or pavement, of an early sea-wall or quay at this point.

Blocks of the same size and character, with their tops just above or below the present sea-level, can be detected at various points in the area of 7–9 on the Plan near the north end of the harbour. There are two blocks in a line running north–south with their tops 0·30 below

[17] See Xanthoudides, *ADelt* 1918, Par. 31.

sea-level to the east of the Roman brick wall at 7. In the sea immediately in front of the Roman concrete wall at 8, just to the north of these, are more squared blocks at the same depth (0·30) below the surface.

Farther north still, about 10 metres beyond the end of 9, two blocks were visible in the autumn of 1956 in the sea with their tops 0·20 below the surface; and about 10 metres north of these again was another pair of blocks, not quite in the same alignment, exposed on the shore. The wall 10, which runs on more or less the same line as these last in the bank that bounds the shore to the west, is also built of squared blocks, but is presumably Roman or Byzantine, as the joints are filled with cement.

At the extreme north end of the harbour at 12, where a low spur of rock projects into the sea, are remains of a structure built of fine dressed masonry, the blocks having bevelled edges (PLATE 64*b*). At the north end a wall, of which two courses are visible, is built up against the cliff face, and the structure appears in fact to be a terrace wall in front of the cliff here. On the south the upper courses have disappeared, and only the tops of two lower courses are visible, awash or (the course beneath) 0·30 below the present sea-level. Two blocks running in a line on the west of the structure may be fallen or part of a later addition. Whether this structure had any connexion with early harbour works at this point is not certain.

(*e*) *The Fish-tanks* (14 on Plan, FIG. 2, and FIGS. 4, 4*a*)

On the north-east side of the promontory round the corner from the harbour there is instead of a beach a wide, flat shelf of bare rock which slopes down under the present sea-level.

Cut into the submerged part of this shelf at its east end, where it stops in a low underwater cliff, there are three rectangular compartments, set in a row, running north-east to south-west, with their floors between 1·95 and 2·20 below the water. That nearest the shore (A) is the largest, and measures about 4 × 3 metres; the smallest (B), in the middle between the other two, is only 2 × 1·25 metres across.

These compartments are evidently fish-tanks of the Roman period, designed to be fed in their original state by a constant flow of sea water, coming and going through an elaborate series of channels which were between 0·50 and 1·0 wide. The large compartment A has two channels leading into it, one at each end of the seaward corners. The smallest (B, in the centre) has a single channel running into it from the sea, but another channel opposite on the west side must have somehow served as an outflow to carry away the water as the waves washed in through the first channel. The outlying compartment C appears to have had no less than three channels, one on the east, another opposite on the west like the centre compartment B, and a third cut through the high reef of rock which protected the tanks from the north for a distance of some 10 metres to the open sea on that side. This northern channel, at least over part of its length, appears to have been a tunnel, to judge from the spring of the arching roof, of which some trace survives.

The sides of the tanks were evidently raised above the natural surface of the rock in which they were cut by artificial walling. A fragment of this walling is preserved, with a bonding course of triangular tiles set in cement, on the boundary dividing B from C. There is a large shapeless mass of concreted masonry, apparently in position, at D just to the west of the outer tank C, and further traces of concrete are visible on what appears to be the north edge of the tank complex, where the rock rises sharply and makes an angle at E on the Plan.

The whole complex may have been roofed, and would then have appeared something like a modern boathouse by the water's edge; but there was nothing to suggest a roof beyond these remains of concrete walls.

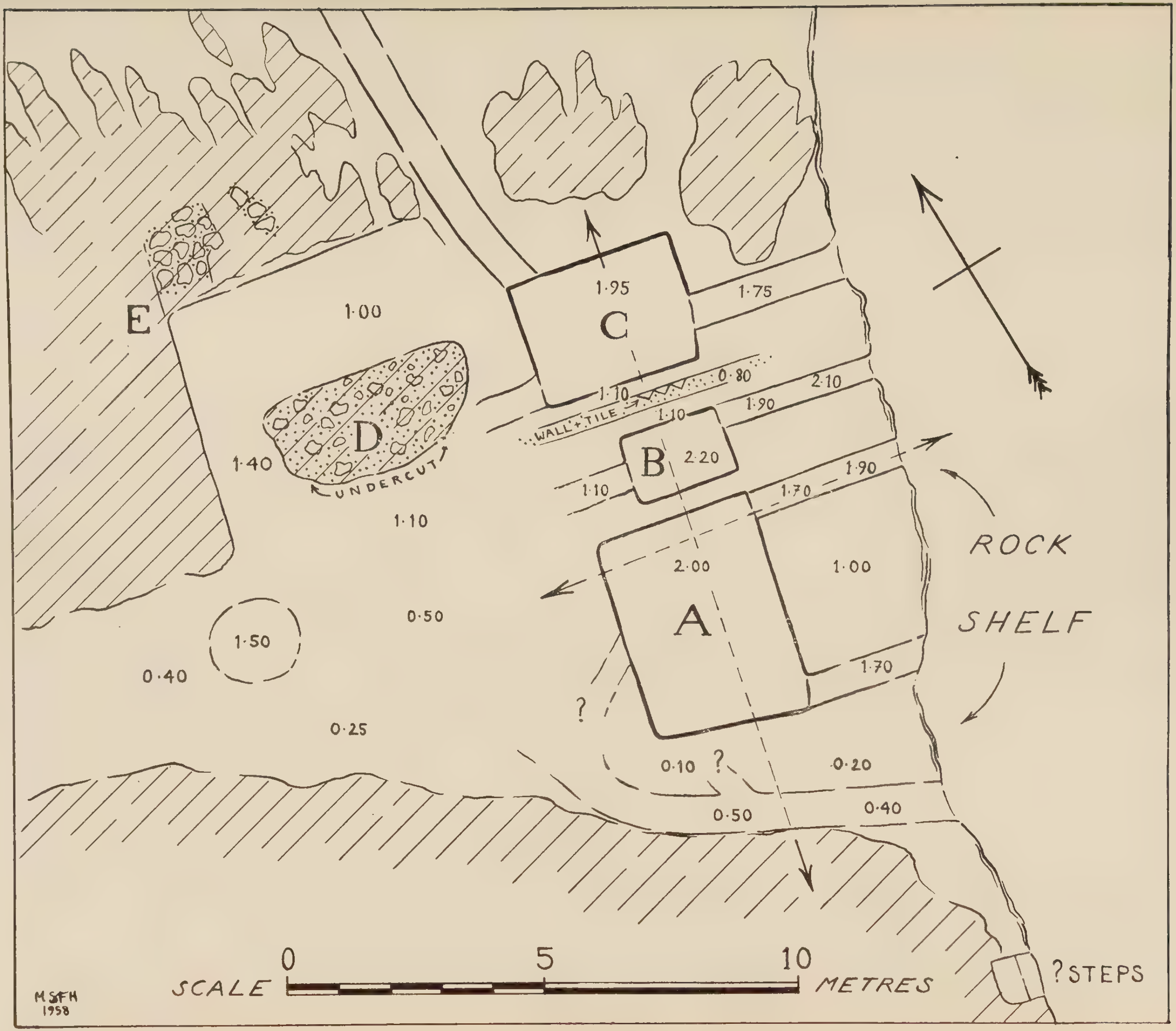

ROCK
SHELF
A
B
C
D
E
1·95
1·75
1·10
0·80
2·10
WALL + TILE
1·10
1·90
2·20
1·10
1·90
1·70
2·00
1·00
1·70
1·00
1·40
UNDERCUT
1·10
0·50
1·50
0·40
0·25
?
0·10
?
0·20
0·50
0·40
?STEPS
SCALE
0
5
10
METRES
M SFH
1958

Fig. 4. Fish tanks cut in the rock at 14 on plan, fig. 2
(Figures give depth below modern sea-level. Parts above sea-level today shaded)

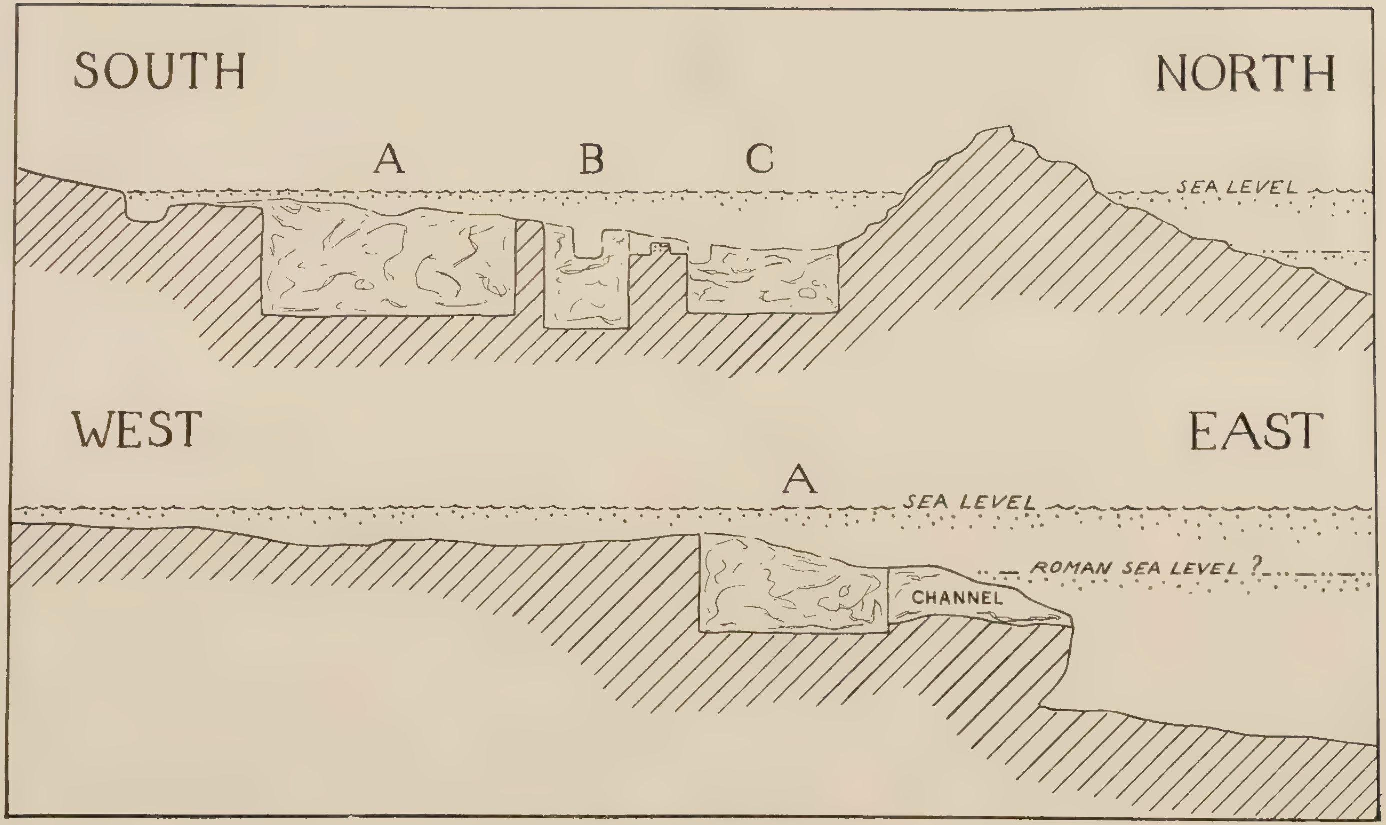

SOUTH
NORTH
A
B
C
SEA LEVEL
WEST
EAST
A
SEA LEVEL
ROMAN SEA LEVEL ?
CHANNEL

Fig. 4*a*. Sections through fish tanks

Over the sea bottom to the west of the headland, and to a lesser extent to the north and inside the harbour, are scattered many fragments of amphorae (FIG. 9, 1–4), but nowhere in such quantity as to indicate a wreck. For the most part these fragments are concreted together or form a mass with the rocks on which they lie. There are also some rectangular blocks, which may come from the Roman defence wall (15 on Plan) on the headland, since blocks of the same type are seen in a stretch of what appears to be part of this wall a few metres north of the pathway leading to the entrance in the south-west corner.

Fragments of a column and two stone blocks in 3 metres of water off the reef projecting from the north-west point of the headland may possibly come from 16, the early Christian basilica church. The column, which is unfluted with a diameter of about 0·55 m., is exposed for a length of 1·20 above the sea bed. Other architectural fragments, including a short length of column of small diameter and some dressed stones, in 7–8 metres depth of water about 30 metres east of the rock shelf with the fish-tanks, may also have come from the basilica church or from other buildings on the headland.

MOCHLOS

The island of Mochlos, with an important Early Minoan settlement and cemetery,[18] lies just outside the eastern approaches to the Gulf of Mirabello on the north coast of Crete. In the Bronze Age, when the sea-level was certainly lower, the island appears to have been joined to the mainland by an isthmus, making it a promontory with a harbour on each side.[19] The island now lies about 150 metres distant from the nearest point on the mainland (PLATE 64*f*), and there is 1–2 metres depth of water over the ridge of the now submerged isthmus, which can be traced extending in a curve with its concave face open to the north-west. The isthmus before subsidence was probably shaped much as the submerged ridge is today, with the sides falling away fairly steeply from a flat top. Rough seas often run in either direction over these shallows of rock and weed, strong currents flowing in the vicinity during stormy weather.

The Minoan settlement was situated on the southern, that is the lee or landward, side of the promontory as it then was. A narrow stepped pathway descends alongside the outer wall of a large ruin built of dressed stones lying about 15 metres from the shore, obliquely to the lower slopes of the settlement, and then disappears among boulders lapped by the sea. Originally the steps may have continued over these boulders and led on to the north end of the isthmus.

In a depth of 1½–2 metres, about 50 metres south of the island, close to the sunken isthmus and in the angle formed by the north end of it and the island shore to the west, are traces of what seems to be ancient walling built with uncemented rough stones, which may be remains of dwellings, or else part of a Minoan retaining wall for the isthmus. A small goblet of Early Minoan type (FIG. 10, 5) was recovered from 5 metres of water in this area.

Farther west from this point what might appear to be the face of a wall built with concrete can be seen running in a direction parallel to the island shore and 12–15 metres distant out from it. But heavy marine growth here makes it difficult to distinguish for certain whether this 'wall' may not in fact be a natural formation. It might, if it is artificial, be part of a sea wall, and, if concrete, must date from the Roman or Byzantine period, when there was an extensive town here covering the island and stretching eastwards on the mainland opposite. Then or later in Byzantine times the island was defended with fortifications like the headland at Chersonisos. At a depth of something less than 2 metres this 'wall' has a deep undercutting which

---

[18] Seager, *AJA* xiii (1909), 273 f.; *Excavations in the Island of Mochlos* (1912).

[19] Pendlebury, *Archaeology of Crete* 3.

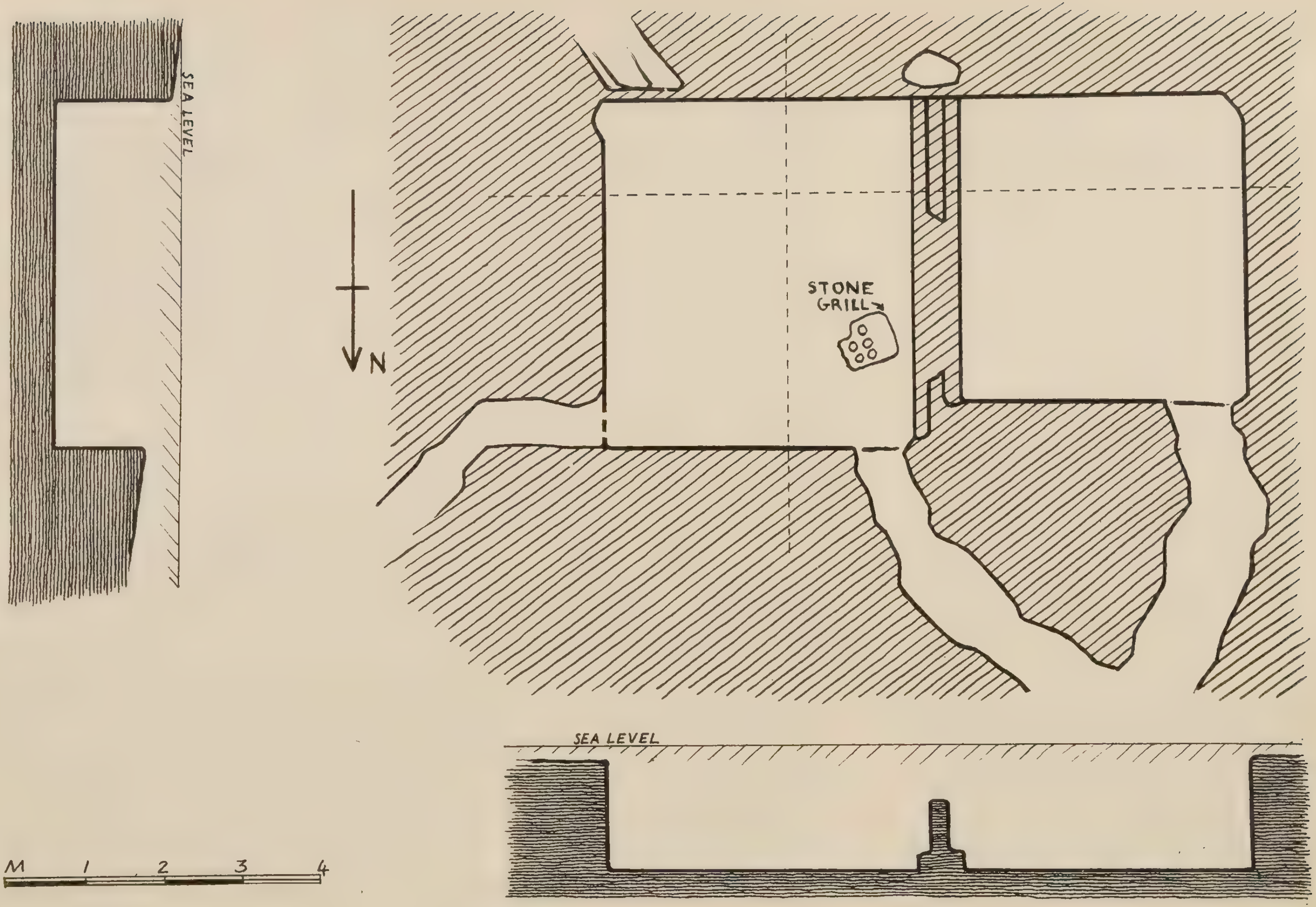

SEA LEVEL
N
STONE GRILL
SEA LEVEL
M
1
2
3
4

Fig. 5. Fish tanks cut in the rock at Mochlos

penetrates about 0·80 m. No trace of submerged buildings was found east of the sunken isthmus, although the remains of the Minoan settlement cover the slopes of the island in this area.

It was thought that the deep waters immediately below the cliffs with the Minoan necropolis at the western edge of the island might produce objects fallen from the tombs above. But it was impossible to make a thorough exploration with aqualungs here, or indeed anywhere at Mochlos, owing to the very fresh wind and heavy seas. A more cursory examination with schnorkel equipment of the water encircling the island failed to reveal anything of note.

Fish-tanks (FIG. 5, PLATE 64*e*)

The mainland shore east of the present-day hamlet of Mochlos is composed chiefly of low cliffs intersected by small ravines. Shelves of rock extend from the base of the cliffs into the sea. They feature occasional submerged natural channels, perhaps the courses of winter torrents cut through the rock before subsidence.

About 70 metres along this shore to the east, and only a few metres from the water's edge, lie two submerged rectangular compartments, the one slightly larger than the other, cut in a flat shelf of rock and resembling those at Chersonisos (p. 270). These compartments like those at Chersonisos are evidently fish-tanks of the Roman period. The compartments were divided by a wall of rock, of which the upper part, now largely missing, was considerably thinner than the lower. Three rock-cut channels lead from the compartments seawards.

In the lower compartment, close to where one of the channels enters it, was found a broken stone slab (L. 0·49, W. 0·42) pierced with several holes (PLATE 63*a*). This stone could fit in an upright position across the mouth of the channel, and it would seem likely to have been a grate or filter, to prevent the fish from escaping, while permitting a flow of water between the tank and the sea. The other channels were no doubt separated from the sea outside by similar filters.

The floors of the pools lie about 1·50 m. below the modern sea-level. The seaward edge of the compartments now stands only 1·10 m. above the floors; and, even allowing for the fact that the edge may have suffered some erosion in the course of centuries, the tanks are unlikely to have contained more than a metre's depth of water. As the sea rises and falls according to the prevailing wind, the waters in the pool must have come as high as the top of the rock on the seaward edge, or even overflowed it at times. The sides of the compartments may therefore have been raised by walling, as seemed to be the case at Chersonisos. But no trace of this was observed.

A cavity, which appears to be artificially cut in the rock at the shore end of the partition wall between the compartments, would give a man come to net fish for the table a secure foothold, and enable him to work his landing-net in either pool; or alternatively, it might have served as a place into which he emptied the fish out of his net.

Some 20 paces along the shore east of the fish-tanks and near the sea's edge is a hole about 1·20 m. in diameter. The vertical sides of the hole are only visible to a depth of 0·30 m., since earth and pebbles have filled it to this level. It may be a scour hole similar to many observed at Chersonisos.

PSEIRA (FIGS. 6, 7)

The island of Pseira is situated in the eastern part of the Gulf of Mirabello, about 1·5 nautical miles from the nearest point of the north coast of Crete and about 2 miles west of Mochlos. 'The eastern coast line is indented by three sandy coves separated from one another by tongues of land, the central one of which juts out into the sea for some 200 yards. On the top and sides of this narrow point and on the adjoining hillside to the south once lay a flourishing Minoan

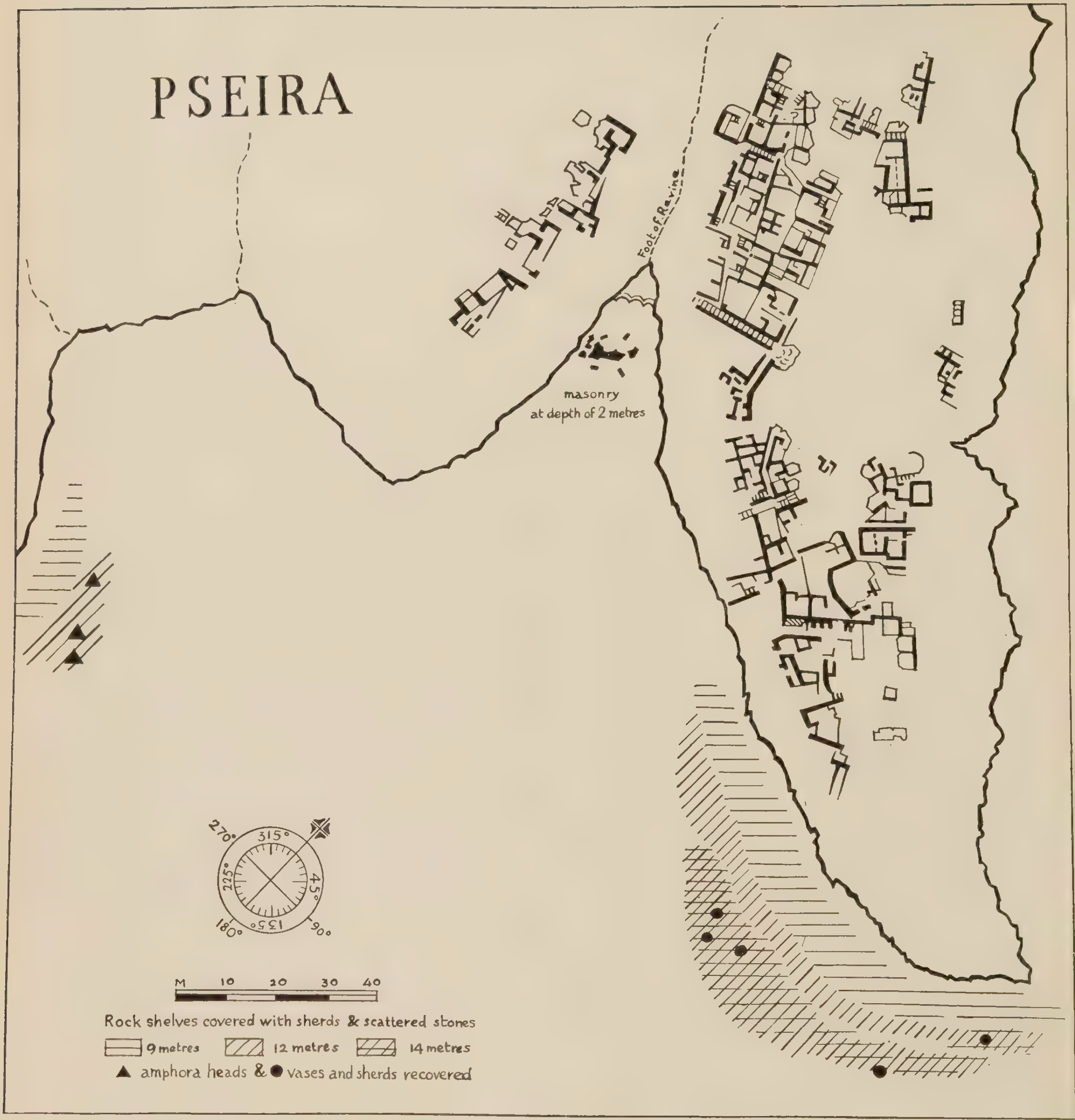

PSEIRA
Foot of Ravine
masonry
at depth of 2 metres
270°
315°
225°
45°
180°
135°
90°
M 10 20 30 40
Rock shelves covered with sherds & scattered stones
9 metres
12 metres
14 metres
▲ amphora heads & ● vases and sherds recovered

Fig. 6. Pseira harbour

settlement which evidently owed its existence to the excellent harbourage for small craft offered by the sheltered cove on the south side of the point. It is exposed solely to the east, and an easterly gale is a thing of rare occurrence in Cretan waters.'[20]

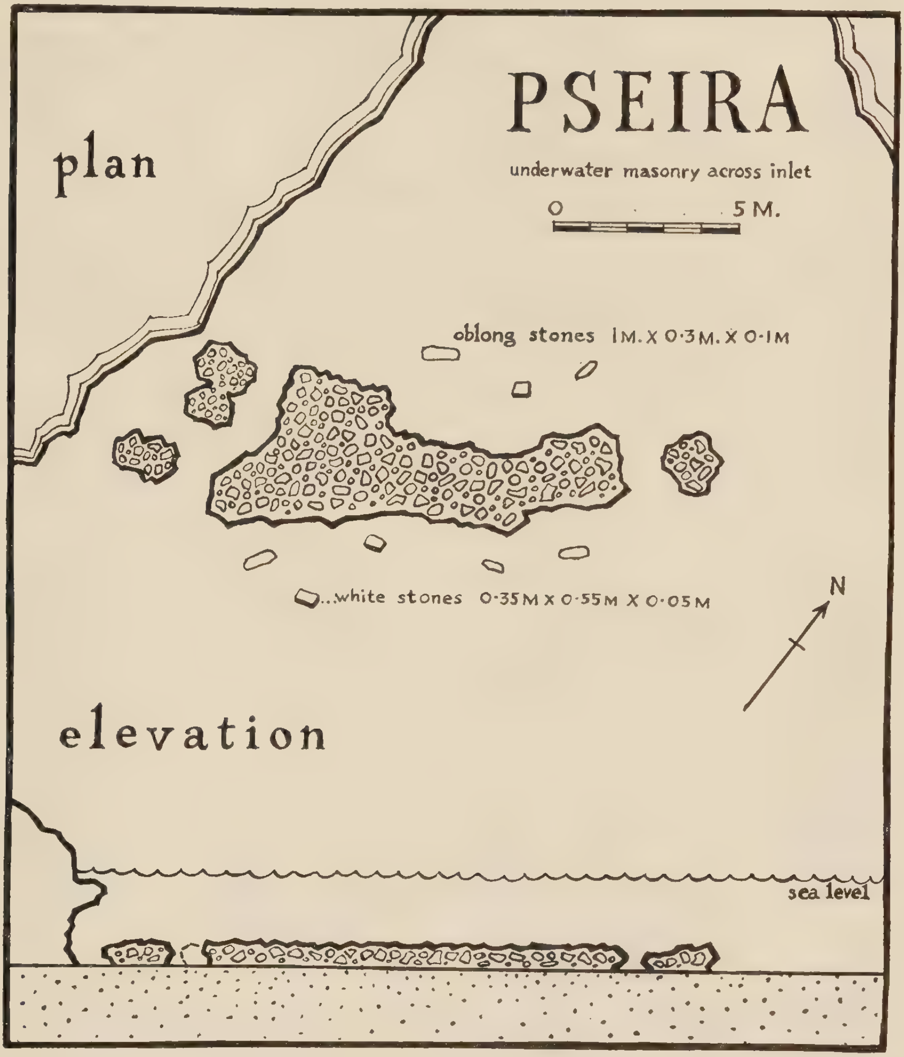

PSEIRA
underwater masonry across inlet
0 5 M.
plan
oblong stones 1M. X 0·3M. X 0·1M
...white stones 0·35M X 0·55M X 0·05M
N
elevation
sea level

FIG. 7. ROMAN MOLE IN PSEIRA HARBOUR

The settlement was also occupied in Roman times: 'On the topmost ridge of the island lie the remains of a Roman military camp, probably a beacon station.' Furthermore, Roman remains were discovered in the course of excavations in the vicinity of the cove, 'showing that this cove was occupied in the same manner and at the same periods as the town site itself'.[21]

Irregular blocks of concrete masonry, presumably remains of a Roman water front, were found lying at a depth of 1·50–2 m. across the head of the cove (FIG. 7). The largest section is about 7·50 m. long; this and other parts of the structure only project 0·50 above the sea bed. The whole is considerably pitted by erosion, and no straight edge can be seen. However, it may be conjectured that before subsidence the mole stretched right across the cove and presented a front some 15 metres long to the sea.

---

[20] Seager, *Excavations in the Island of Pseira* (1910) 6.

[21] Ibid. 7.

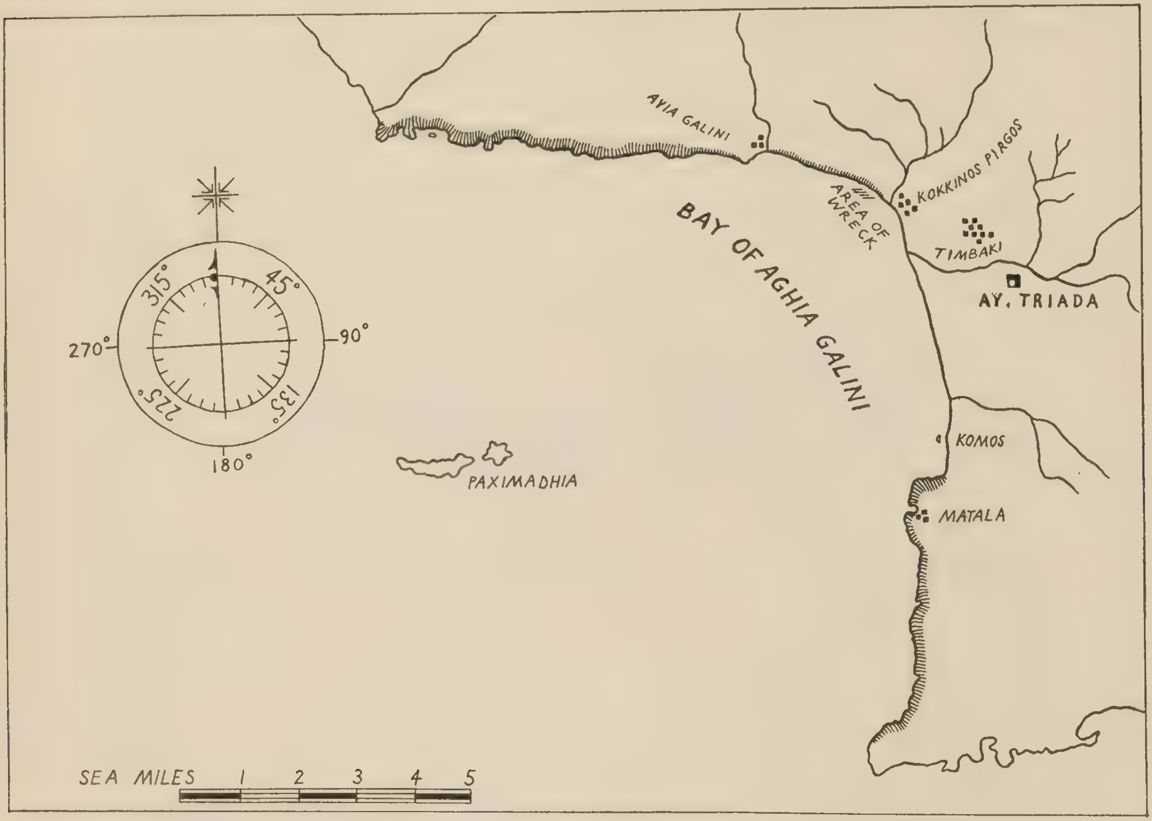

AYIA GALINI
AREA OF WRECK
KOKKINOS PIRGOS
BAY OF AGHIA GALINI
TIMBAKI
AY. TRIADA
315°
45°
270°
90°
225°
135°
180°
KOMOS
PAXIMADHIA
MATALA
SEA MILES 1 2 3 4 5

Fig. 8. Bay of Ayia Galini

Several Minoan vases, complete or nearly complete, which had evidently fallen into the sea from the settlement on the slopes above, were found lying in 10–12 metres of water some distance from the shore. Others were recovered from about 14 to 15 metres depth off the east point of the main settlement, among remains of fallen masonry and heavy deposits of concreted sherds (fig. 10, 6–11, plate 65*b*, *c*).

Ayia Galini (fig. 8)

The bay of Ayia Galini lies in the north-east corner of the Messara Gulf on the south coast of Crete. The shore of the bay, between Kokkinos Pirgos in the east and the small harbour of Ayia Galini (or Eremopoli, ancient Sulia) on the west, is bounded by high cliffs overlooking a narrow beach.

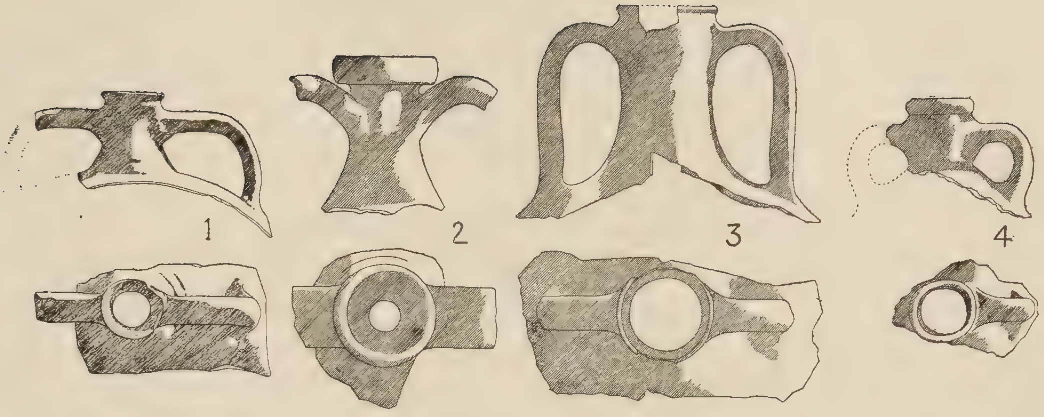


Fig. 9. Amphora necks from Chersonisos (scale 1 : 4)

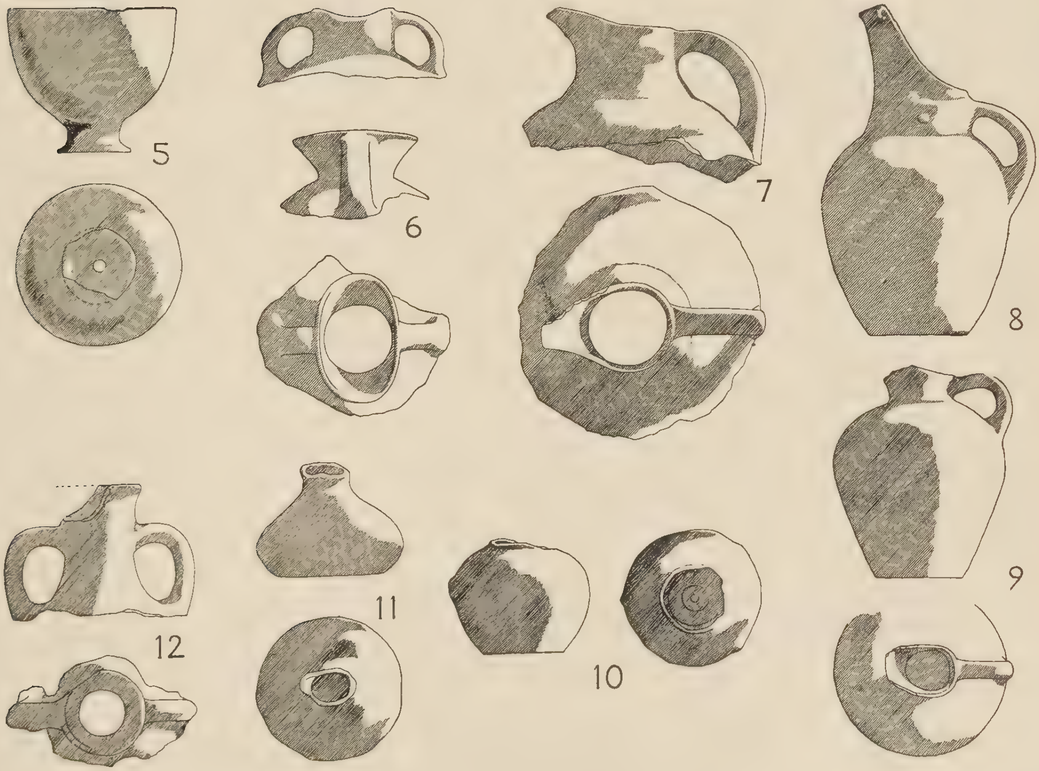

5
6
7
8
9
11
12
10

Fig. 10. Vases from Mochlos (5), Pseira (6–11), and Ayia Galini (12) (scale 1 : 4)

It was in this area that a fisherman of Ayia Galini, Mikhaili Variatakis, in April 1937 discovered the remains of an ancient wreck.[22] Fragments of bronze statuary, bronze figurines, and other bronze objects, together with some pieces of lead, were recovered.

The bronzes were evidently part of the cargo of a ship which ran ashore on this stormbound coast, and a legend recounted by the oldest inhabitants of Ayia Galini says that a pirate vessel which had looted antiquities from Gortyna and Phaistos was once wrecked somewhere here. The finds apparently belong to both the Hellenistic and the Roman periods. Professor Marinatos has therefore suggested that such a cargo might be the stock-in-trade of an itinerant bronze founder or metal merchant of Roman times.[23]

At the invitation of Dr. Platon an attempt was made to rediscover the wreck. Variatakis was engaged to guide the party to the scene of his finds, about 150 metres off the mouth of the easternmost ravine (known locally as Kakoskala) between Kokkinos Pirgos and Ayia Galini. The sea bed here lies at a depth of about 5 metres; low shelves of rock, some overhanging, crop up from the sandy bottom, and weed grows in dense patches.

From the area which Variatakis indicated were recovered some fragments of pottery of Roman date (FIG. 10, 12) and a strip of thin lead sheeting (L. 0·40, W. 0·145), such as might have sheathed the planks of a ship's underside (PLATE 65*d*). This lead sheeting is perforated by a number of small round holes, which may have been made by the nails fastening it to the hull.

No further evidence of a sunken ship or its cargo came to light, probably because at this time of the year, in August, any remains would be overlaid with silt and sand. The wreck was first discovered in April, a season when the ravines are often filled with torrents carrying the melted snows from the mountains; at such a time silt and sand lying on the sea bed close in-shore are likely to be swept into deeper water by the currents flowing at points where swift torrents debouch into the sea. Variatakis recollects that it was snowing, but the torrents were dry, when he made his discovery. Early spring would therefore seem to be the more promising season in which to make an attempt to locate the wreck and its cargo.

John Leatham
Sinclair Hood

---

[22] For an account of the discovery and finds, see *AE* 1948–9, ʼΑρχ. Χρον. 1–6. Cf. ʼΕπετήρις ʽΕτ. Κρητικῶν Σπουδῶν 1 (1938) 610–11, 2 (1939) 529.

[23] *AA* 1937, 229–34.

A MINOAN SHAFT-GRAVE ON THE SLOPES OPPOSITE THE TEMPLE TOMB

(KNOSSOS SURVEY **152**)

(PLATE 66*b*, *e–f*; FIGS. 1–2, p. 282)

THE slopes of Ailias beyond the Kairatos stream to the east of the Minoan city have so far largely escaped the intensive vineyard cultivation that has swallowed so much of the land round Knossos. Isolated tombs and cemeteries (e.g. Knossos Survey **58**, **95**, **96**) have been explored on these slopes due east and north of the Palace of Minos, but virtually nothing has yet been recorded from the area to the south. Minoan sherds on the surface of the fields opposite the Temple Tomb, however, suggest the possible existence of tombs in this area.

In 1951 on the lower slopes here on land belonging to Evstratios Sarikis a hole was dug to plant an olive tree, leading to the removal of some large stones and disclosing a right-angled cut in the rock, which was noticed by the sharp and practised eye of Spiro Vasilakis. Two years later with the permission of Dr. Platon, Ephor of Antiquities for Crete, I cleared the cutting during the course of the School's excavations in the Middle Minoan cemetery higher on the slopes of Ailias to the north. The cutting, which was rectangular, measuring 1·90 × 1·40 at the bottom, and 1·20 deep from the surface of the rock at the highest point in the south-east corner, is perhaps best explained as a plundered Minoan shaft-grave, although no sign of a burial or of any grave goods was found in it. It was entirely filled below the level of the rock surface with large blocks of the local limestone, several of them worked, and including a slab which might have served as the covering for a shaft-grave, and a pyramid with a square socket in the top (*A* on the plan, FIG. 1), evidently the base for some ritual object like a double axe.

The scraps of pottery from the fill of the shaft were all apparently Minoan, although some sherds that might have belonged to later periods were found in the area.

A. Stand for ritual object (double axe?) (FIG. 2, PLATE 66*b*, *e*). Soft white limestone. Damaged, and part of the top and bottom corners chipped away. Ht. 0·29, W. at top 0·14, at bottom 0·26. In the centre of the top a square cutting (W. 0·036, Depth 0·06), to hold some ritual object, which may have been a double axe.

Several stands of this kind, but larger and more elaborate, were found in the Palace and elsewhere at Knossos.[1] Evans thought they were for holding double axes on the analogy of the pictures of similar stands with double axes on the A. Triadha sarcophagus. Such stands were normally stepped (e.g. *PM* i. 437, fig. 314). But at least one, from the South-east House at Knossos, is a plain pyramid like ours (ibid. 427, fig. 307). An unstepped pyramidal base, comparable with these stands but without any socket in the top, came from the High Priest's House (*PM* iv. 212).

Nilsson (*The Minoan-Mycenaean Religion*² 216 f.) lists examples of such double-axe stands from other sites in Crete—Phaistos, A. Triadha, Palaikastro, Gournia (circular!), Psychro Cave, Tylissos. One example has been found on the mainland at Mycenae (*ChTs* 210, pl. lvii*d*).

SINCLAIR HOOD

---

[1] *In Palace*: (1) Long Corridor of the Magazines (*PM* i. 437, fig. 314); (2) Queen's Megaron (iii. 369); (3) South-east Quarter near Shrine of Double Axes (ii. 334). *Outside Palace*: (4) South House (ii. 386); (5) South-east House (i. 427, fig. 307); (6) Little Palace (ii. 527); (7) Caravanserai (ii. 139).

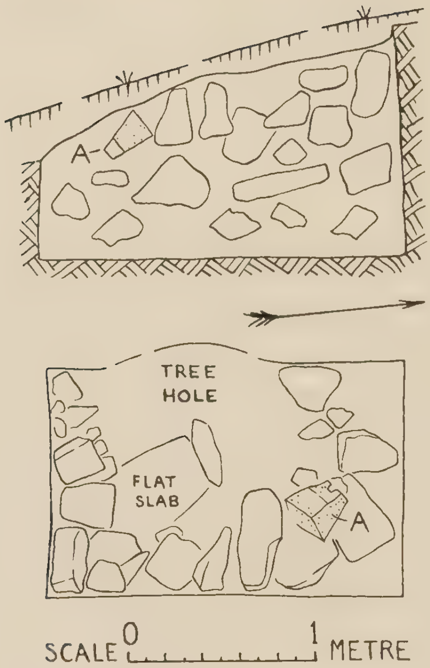

A
TREE HOLE
FLAT SLAB
A
SCALE 0 1 METRE

Fig. 1. Plan and Section

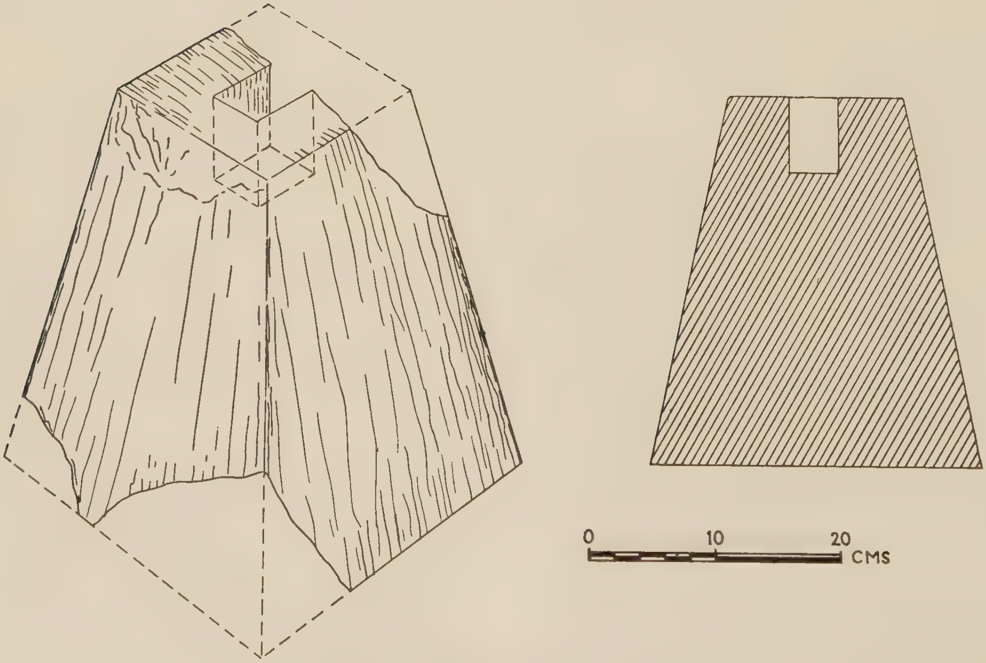


Fig. 2. Stand for ? double-axe

A MINOAN SHAFT-GRAVE IN THE BANK WITH HOGARTH'S TOMBS

(KNOSSOS SURVEY **16**)

(PLATE 66*a*, *c–d*; FIG. 1, p. 284)

WHAT seemed to be the covering slabs of a tomb were noticed by the School's foreman, Manoli Markoyiannakis, exposed in the low field bank which forms the southern continuation of the high bank with the Geometric tombs dug by Hogarth and Payne, a couple of metres north of the path running eastwards across the base of the Kefala ridge past the Hellenic tower (*BSA* 52 (1957) 244ff.). During the course of the School's excavation of the early Christian building on the neighbouring Sanatorium site in 1953 Dr. N. Platon, Ephor of Antiquities for Crete, kindly gave me permission to examine the slabs, which were found to cover a grave roughly rectangular in shape and measuring 1·60 × 0·70 at the bottom (FIG. 1). The grave's floor was only 1·15 at the west end and 1·60 at the east below the modern surface of the rock; but the surface here must have once stood much higher, and have worn away owing to erosion.

The three large slabs[1] over the grave were blocks of dressed limestone. That at the east end (*A*) had a 'branch' sign (L. 0·25, max. W. 0·13), boldly carved with broad shallow V-shaped grooves, on the upper exposed face in the north-east corner (FIG. 1, PLATE 66*d*). The joints between the three slabs were carefully wedged with small stones. In the grave below them was a clean fill of kouskouras, the soft white chalky rock of the area, containing a few nondescript Minoan sherds. The cover slabs with the smaller stones wedged in the joints between them seemed to be in place; but the earth below contained small lumps of rock, as if the grave had been deliberately filled before the cover slabs were laid in position. This agrees with what has been observed in the case of other Minoan shaft-graves in the Gypsades cemetery (see p. 219). At the bottom of the grave were the scanty remains of a skeleton, lying on its back with the knees flexed and originally perhaps raised in the usual manner (see p. 218). Although the cover slabs appeared to be in position, and the grave undisturbed, nothing was found with the skeleton.[2] The grave is, however, like other similar shaft-graves at Knossos, presumably Late Minoan, and perhaps early rather than late in the period. The cover slabs may well be old building blocks, and they and the 'branch' sign carved on one of them may therefore be considerably earlier than the grave.[3]

SINCLAIR HOOD

---

[1] *A* (L. 1·15, W. 0·50, Th. 0·21); *B* (L. 1·24, W. 0·47, Th. 0·22); *C* (L. 0·90, W. 0·58, Th. 0·23).

[2] Several of the shaft-graves in the Zafer Papoura cemetery were found with nothing in them except remains of a skeleton (e.g. *PTs* 47, nos. 23, 24).

[3] This was the view of Evans in regard to a couple of signs carved on the upper surface of one of the cover slabs of a shaft-grave at Zafer Papoura (*PTs* 13).

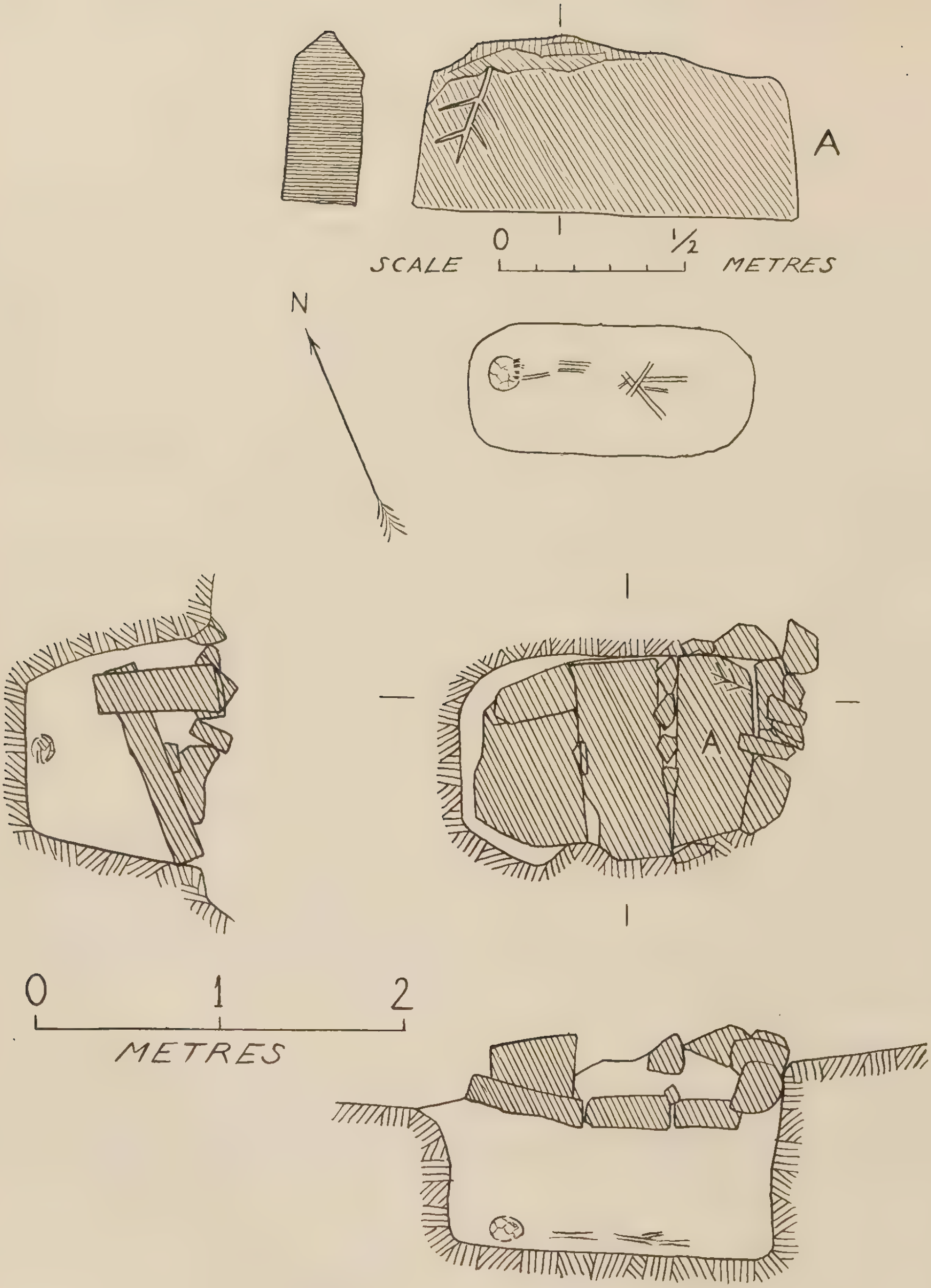

A
0
½
SCALE
METRES
N
A
0
1
2
METRES

Fig. 1. Plan and section, with inscribed slab (top, A)

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

(PLATES 67–70)

AMONG the local finds displayed in the Museum of Antiquities at the Piraeus are six Roman portraits, all of Pentelic marble and all unrestored. Two of them, a colossal head of Trajan (no. 270) and a colossal statue of Balbinus (no. 278), have already been fully edited.[1] But according to the Director of the Piraeus Museum, Dr. Threpsiades, and to the best of the present writer's knowledge, of the other portraits two are still unpublished, two described without any illustration; and it is with Dr. Threpsiades' kind permission that all four are published here.[2]

I. No. E 4. *Head of Claudius* (PLATE 67*a–b*)[3]
Total height: 48 cm.
Height from crown of head to bottom of chin: 26 cm.
Width across at greatest extent: 20 cm.
Width from back to front at greatest extent: 24 cm.

The sculpture depicts the head and neck, slightly over life-size, of an elderly man, in whom we can immediately recognize the Emperor Claudius. At the base of the neck is a rounded 'tenon', designed for insertion into a cavity between the shoulders of the now vanished body of a full-length statue. Claudius' face has sustained considerable damage. The nose has practically gone, only part of the side, and the hollow interior, of the right nostril remaining. The chin, lips, and right ear are bruised, the brow is marred by several abrasures, and the left ear is lost. The head is corroded on the left side and shells adhere to the left side of the neck, indicating that the piece was recovered from water, the action of which has also turned the marble to a greyish hue. It was, in fact, dredged up from Piraeus harbour near the site of the ancient Emporion, in 1930.

But despite these blemishes, the familiar features of the Emperor stand out clearly. As on all his portraits in the round, the hair on the flat crown and on the back of the head is summarily, yet plastically, rendered, while the thatch-like fringe of locks, combed forward on to the brow, is worked with considerable care. On the right side is one of the characteristic twisted curls, each of which escapes down the cheek in front of the ear; and behind the ears, growing low on the nape of the neck, there is the well-known mat of hair. Here, as elsewhere, the lower half of the brow protrudes beyond the upper half, from which it is separated by a horizontal furrow; and between the temples, above the nose, there is the deep depression that gives Claudius his somewhat strained and scowling aspect. A diagonal line runs down across the upper half of each cheek, from the inner corner of each eye; and below, a still deeper line runs in a curving course from the upper corner of each nostril to each corner of the wide, tightly-closed mouth. The head, which is slightly turned towards the spectator's left, is poised upon the Emperor's characteristically thick and stocky neck. The chin is, as usual, rather full, with the 'Adam's apple' pronounced.

---

[1] Trajan: W. H. Gross, *Bildnisse Traians* (1940) no. 54, 74, 101 f., pl. 27*b*; C. Carducci, 'Ritratto dell'imperatore Traiano conservato nel Museo di Pireo' (*Bull. Mus. Imp. Rom.* iv (1933) 37–43, figs. 1, 2); Balbinus: *JOAI* xxix (1935) 97–108, pls. 4–6. (Dr. Cornelius Vermeule informs me that he has discovered fragments of a companion colossal statue of Pupienus in the garden and apotheke of the museum.)

[2] The photographs of the four portraits were kindly taken for the present writer in 1954 by Mr. John Boardman, then Assistant Director of the British School of Archaeology at Athens.

[3] Identified as Claudius, and described, without illustration, by M. Stuart in *The Portraiture of Claudius: Preliminary Studies* (1938) 74–75, no. 29. Cf. *AJA* xxxv (1931) 91; P. Graindor, *Athènes de Tibère à Trajan* (1931) 183, n. 1.

The Piraeus head presents us with a highly realistic, not to say 'veristic', portrait of Claudius, beside which the Windsor,[4] Vienna,[5] and British Museum[6] cameo-portraits, and even the brilliant likenesses in the Lateran[7] and Sala Rotonda of the Vatican[8] respectively, look almost idealized. As far as general impression goes, one of the closest parallels to the Piraeus Claudius is furnished by the small Parian marble head of the Emperor, 8¼ inches high, recently acquired by the British Museum, which may well be derived from some historical scene in bold relief (PLATE 67*c–d*).[9] The resemblance between the two heads is particularly striking when they are seen together in profile.

II. No. E 3. *Cuirassed bust of the mid-first century* (PLATE 68*a–b*)
Total height: 48 cm.
Height from crown of head to bottom of chin: 24 cm.
Width across at greatest extent: 28 cm.
Width from back to front at greatest extent: 20 cm.

The subject of the second portrait in our series, found in the Piraeus in March 1930, cannot be so easily determined. The piece depicts a youngish man, wearing a cuirass and looking up, with his head turned very slightly towards the spectator's left. Here both of the hollows inside the nostrils are preserved, although the top of the nose, apart from a portion of the bridge, is lost. The outer edge of both ears is chipped; chin, lips, both eye-balls, and the right eyebrow are abrased; and a large section of the hair above the left temple has gone. A break at the right shoulder has caused the disappearance of the right-hand lappets of the cuirass, which seem to have been worked in a separate piece of marble and fitted into the deep groove visible at this point. Part of the back of the head is broken away. The hollowed-out back of the bust and the back of the head are unworked.

The hair is dressed in a crimped, double fringe above the brow, in the stepped or tiered coiffure (*coma in gradus formata*) favoured, according to Suetonius, by Nero and represented on his mature portraits.[10] It grows low and thick like a mat on the nape of the neck, and a twisted curl hangs down in front of each ear. The chin and neck are rather full, with the 'Adam's apple' fairly well defined. The flesh sags on either side of the mouth, giving the cheeks a somewhat sunken appearance. But furrows and creases suggestive of advancing years are absent. This is the face of an amiable, but rather weak and vacant-looking character, whose gently tilted head and far-away gaze recall the 'pathetic' type of mid-Hellenistic portrait.

The neck of the tunic shows above the upper edge of the cuirass, on which is carved in low relief a scowling Medusa, with wings sprouting from the hair and snakes coiled and knotted underneath the chin.

In its hair-style, upward gaze, and stocky neck the Piraeus bust is reminiscent of portraits of Nero. But it cannot depict that Emperor. The cheeks are too lean; the eyes are not deeply enough set; the distance between the nose and the mouth is too great; there are no side-whiskers, as there are on many of Nero's portraits, on the fine head, for instance, in the Museo

---

[4] *Archaeologia* xlv (1880) pl. 1.

[5] F. Eichler and E. Kris, *Die Kameen im Kunsthistorischen Museum, Wien* (1927) pl. 9.

[6] *British Museum Quarterly* xiii (1939) 79–81, pl. 33*b*.

[7] R. West, *Römische Porträt-Plastik* i (1933) pl. 56, no. 243; Anderson, Roma, no. 24225.

[8] G. Lippold, *Die Sculpturen des Vaticanischen Museums*, iii. 1 (1936) no. 550, pl. 41; Alinari, Roma, no. 6535; Anderson, Roma, nos. 1233, 1340, 2252; German Institute in Rome negative xxi–23–42.

[9] *British Museum Quarterly* xix (1954) 64–65, pl. 25.

[10] *Nero* 51.

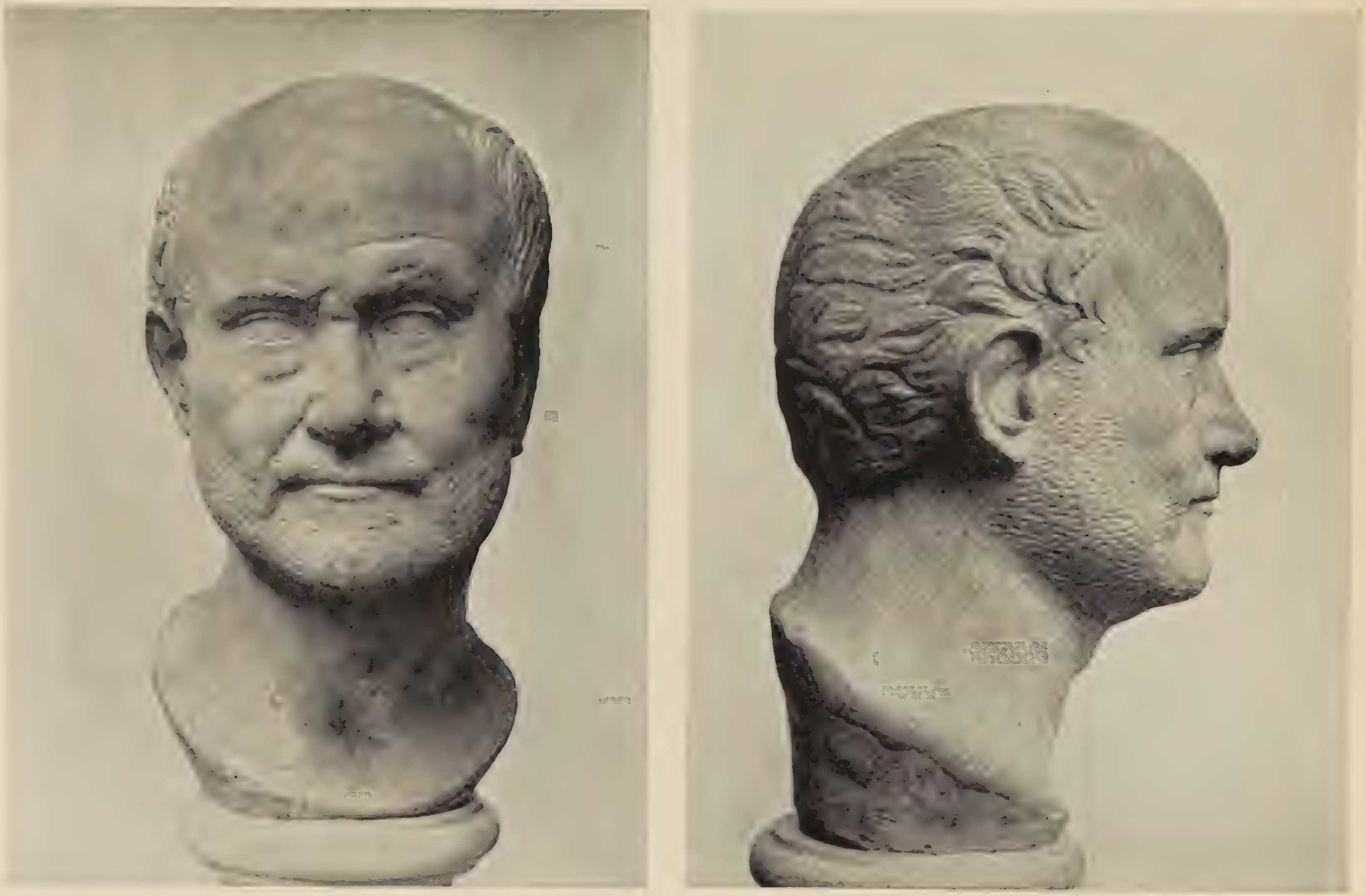


Fig. 1. BM 1963

Nazionale Romano delle Terme;[11] and the face displays no traces of Neronian truculence. M. Stuart[12] includes it in his catalogue of portraits of Claudius and describes it as an example of the type of portrait of that Emperor which is represented by the wreathed head in the Sala Rotonda of the Vatican (no. 551).[13] But to the mind of the present writer, the features of the Piraeus bust, apart from the twisted side-curls and the mat of hair on the neck, bear little resemblance to those of that portrait, or of any other portraits, of Claudius, even allowing for the possibility that this artist had idealized and rejuvenated the Emperor very considerably. The face is the wrong shape; the eyebrows are too much arched; the expression is not strained; and the tiered hair-style, while shown on a number of numismatic likenesses of Claudius,[14] does not appear on his portraits in the round or on his cameo-portraits. These are not the features of Otho, who retained the Neronian hair-do, nor of Domitian, who revived it. We are, in fact, unlikely to have before us the portrait of any emperor or imperial prince whose likeness we know. But the ornamented cuirass suggests that the subject, if not a member of the ruling House, was a person of some importance, a general, perhaps, or other high-ranking army official of Nero's period.

III. No. E 717. *Bust of C. Memmius Threptus* (PLATE 69*a–c*)
Total height: 50 cm.
Height from crown of head to bottom of chin: 23 cm.
Width across at greatest extent: 30 cm.
Width from back to front at greatest extent: 20 cm.

The third portrait represents a man in early middle age, with undraped bust, which comprises the shoulders and upper half of the chest and rests on a rounded base, carved with a concave depression between two plain convex mouldings. The back of the bust, which was clearly not intended to be viewed, slopes inwards from the back of the neck to the upper surface of the base. Most of the nose from below the bridge has been smashed away, only part of the left nostril being left. There is chipping along the outer edge of each ear, and there are abrasures on the crown of the head and in the hair, above the left temple. The hair, which grows low on the nape of the neck, is worked all over the head, but less carefully at the back and on the crown than in front, where it is combed forward in neat, delicately formed, and lankly curving locks. The locks at the top meet those at the side at a sharp angle, so that the brow, which is furrowed by two lightly engraved, horizontal lines, is roughly trapezoid. Above the nose, between the eyebrows, are two asymmetrical, vertically curving lines, which give the subject a slightly frowning appearance. There are two small 'crow's feet' at the outer corner of each of the large, heavily-lidded eyes, which are beautifully carved and perfectly preserved. The face is broad, with rather prominent cheek-bones. The mouth is small and curved, with a full lower lip, beyond which the upper lip protrudes a little. The flesh-surfaces of brow and cheeks have a smooth, polished finish. Above the upper lip is a light moustache and a light beard sheathes the chin, spreading up the sides of the cheeks to meet the lowest side-locks of hair in front of each ear. Both moustache and beard are stippled with very light, short strokes of the chisel, in a technique familiar on portraits of the second quarter of the third century. The general expression of the face is genial and kindly, but not indicative either of great intellect or of strength of character.

At the bottom of the bust is the dedicatory inscription (PLATE 69*c*), written in four lines:

---

[11] West, op. cit. pl. 62, no. 272.

[12] Stuart, op. cit. 75–76, no. 30: the portrait is described without illustration.

[13] Lippold, op. cit. pls. 41, 42; West, op. cit. pl. 57, no. 244.

[14] *Coins of the Roman Empire in the British Museum* i (1923) pls. 35, nos. 1, 6; 36, no. 5.

Γ⟨αίος⟩ Μέ⟨μμιος⟩ Θρέπτος
Λαμπτρεύς
Διὶ ὑψίστῳ
εὐχήν[15]

The subject of the portrait is, then, Caius Memmius Threptus, presumably a member of a freedmen family that had been adopted into the Roman *gens* of the Memmii, and belonging to the Attic deme of Lamptrae; and he had vowed his likeness to Zeus the All-Highest.

In *IG* this inscription is dated, on the score of its lettering, to the end of the first, or beginning of the second, century A.D.; and with this dating the shape of the bust, the hair-style, the plain eyes, and the realistic features are in full agreement. The bust-form is that of the late-Flavian and Trajanic periods. The realism is a modified version of the very intense realism, most brilliantly exemplified in portraits of old and elderly men, that characterized the iconography of the decades preceding the age of Hadrianic idealism. The meticulous carving of the individual, sinuous locks of hair above the brow is closely paralleled on the 'veristic' late-Flavian or early-Trajanic bust of an elderly man in the Ostia Museum (PLATE 69*d*),[16] the only difference being that there the locks are straighter than in the case of the Piraeus portrait.

The subject of the Ostia bust is clean-shaven; and at first sight, the stippled moustache and beard worn by C. Memmius Threptus might seem to accord ill with a late first- to early second-century dating. But there are other portraits assignable on grounds of technique and style to a period ranging from Flavian to Hadrianic times, which carry the same 'third-century' features. Of these, the highly realistic head of an elderly man in the British Museum, of late-Flavian or Trajanic date (FIG. 1),[17] provides, in some respects, the closest parallel to the Piraeus piece. There the face is much more lined and creased than on our portrait, and the top of the head is bald. But the careful rendering of the individual locks on the sides and back of the head strongly recalls the treatment of Threptus' hair; while the stippled moustache and beard are precisely the same in character as his. A similar, but rather less pronounced, picking out of moustache and beard appears on another realistic portrait, this time of a middle-aged man, in the Uffizi in Florence, which has been ascribed to the Flavian period.[18] Yet the shape of the bust, the marking of the pupils of the eyes, and the thick, somewhat pictorial hair are more suggestive of the Hadrianic age, when some realistic portraits of clean-shaven, or at least not pictorially bearded, persons lingered on alongside of the new picturesque and idealizing types.[19] Again, we may assign to the Hadrianic, rather than to the Flavian period, the head, now set on an Antonine bust and popularly, but quite erroneously, known as 'Trebonianus Gallus', in the Stanza degl' Imperatori of the Capitoline Museum (PLATE 69*a*).[20] There once more we find realism in the face—asymmetrical, horizontal wrinkles on the brown, 'crow's feet' at the corners of the eyes, pouches below the eyes, sunken and sagging cheeks—combined with stippled moustache and beard and with carefully curled, pictorial hair, growing low over the forehead, and with light marking of the eyes by crescents.

The wearing of a very close-clipped moustache and beard, rendered in sculpture by stippling or picking, would appear to have been a not very widespread fashion, roughly intermediate in

---

[15] *IG* ii–iii. 3², i (1935) no. 4737. The editor describes the inscription as being cut on a 'protome viri imberbis', failing to observe the stippled beard.

[16] *Le Arti* ii (1939) 4–5, pl. 1, figs. 2, 3.

[17] A. H. Smith, *Catalogue of Sculptures in the British Museum* iii (1904) 180, no. 1963, pl. 20.

[18] *JHS* xx (1900) 33–34, pl. 2.

[19] e.g. the clean-shaven man, with realistic features, who accompanies Hadrian in the hunting and sacrificing scenes of the 'tondi' on the Arch of Constantine (H. P. L'Orange and A. von Gerkan, *Der spätantike Bildschmuck des Konstantinsbogens* (1939) pls. 40–42).

[20] Ed. H. Stuart Jones, *Catalogue of Sculptures of the Museo Capitolino* (1912) 210, no. 73, pl. 51; Anderson, Roma, no. 1635. The laurel-wreath suggests that the subject was portrayed as participating in some ceremonial rite.

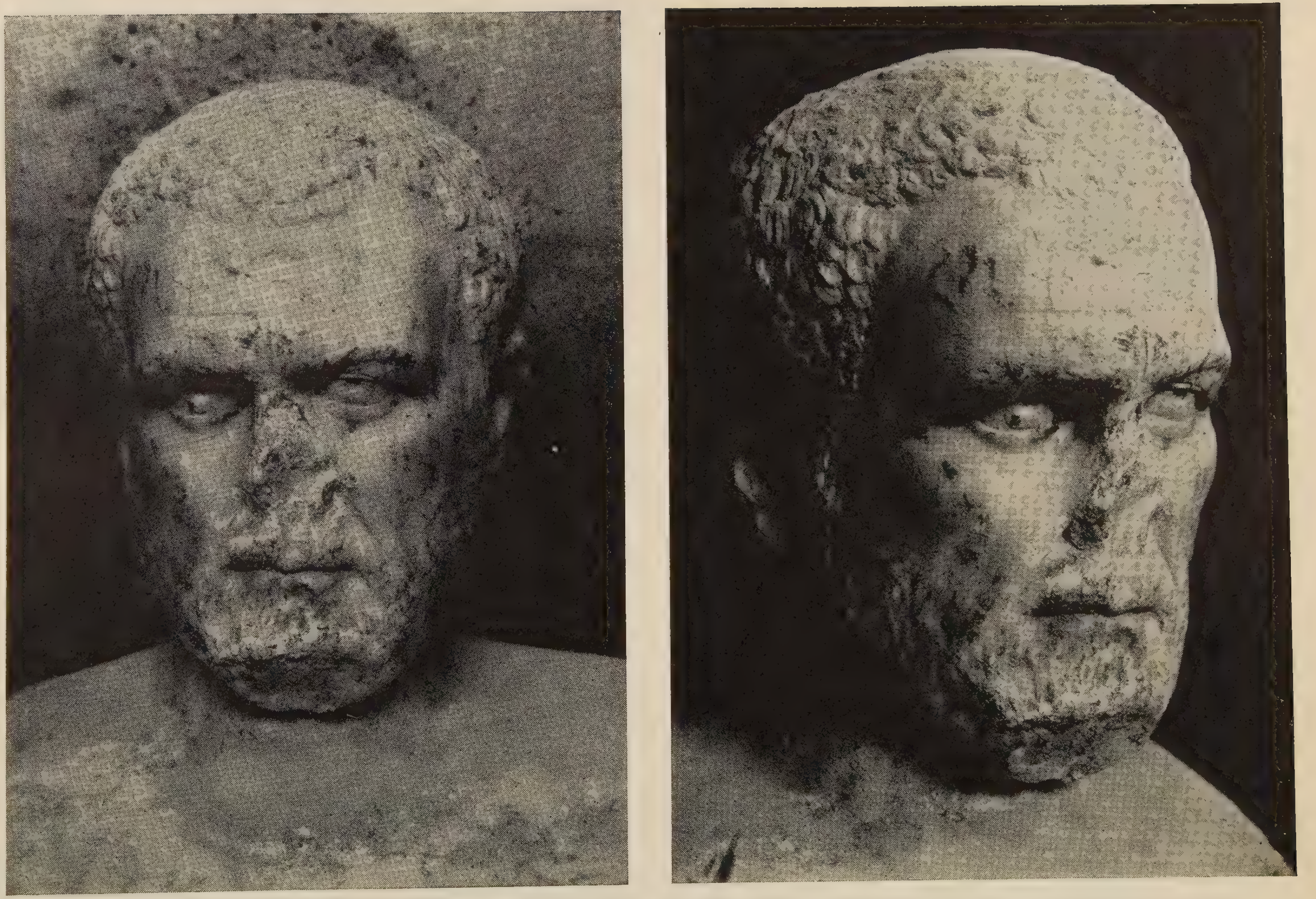


Fig. 2. Athens, NM 75

date between the short-lived vogue for full moustaches and beards during Domitian's later years[21] and the enduring taste for pictorial moustaches and beards that was introduced under Hadrian.

IV. No. S 7. *Head of a man of the mid-third century* (PLATE 70*b*, *d*)
Total height: 32 cm.
Height from crown of head to bottom of chin: 25 cm.
Width across at greatest extent: 17 cm.
Width from back to front at greatest extent: 21 cm.

The fourth portrait is less well preserved, and considerably later in date, than the three others in our series. Of the nose, only the holes in the nostrils remain. The ears, lips, and eyes, which seem to have been always plain, are somewhat battered, while hair, brow, and cheeks wear a generally weathered appearance. A crack in the marble starts at the top of the right temple and runs down the right side of the face, beside the outer corner of the right eye, as far as the chin.

The scanty hair recedes above each temple, leaving an empty space between each group of side-locks and the triangle of hair above the centre of the brow. Both central and lateral locks are summarily rendered with the chisel, while the hair at the back presents a wholly unworked surface, which forms a hard, slightly protruding line across the nape of the neck, resembling the bottom edge of a close-fitting cap. The upper lip is clean-shaven. The sheath-like beard is executed in the same manner as the hair, in very low, sketchy relief, the wavy forms of the locks of both hair and beard being completely similar. The eyes are large and rather staring. The skull is virtually cubic. In all these traits we have a foretaste of the late-antique, combined with a schematic, almost artificial, realism, which is displayed in the four regular, horizontal furrows that gash the brow and in the somewhat perfunctory creases between the eyebrows, at the corners of the eyes, and at the corners of the nostrils.

The Piraeus head is, in fact, a good example of the realistic revival in mid-third-century iconography, of which we have a splendid instance in the portrait of Trajan Decius in the Stanza degl' Imperatori in the Capitoline Museum (PLATE 70*c*).[22] Hair and beard grow, and are treated, there in exactly the same way as on the Piraeus sculpture; and there again we note the four transverse furrows on the brow, while the creases between the eyebrows, the pouches below the eyes, and the sagging cheeks are much more ruthlessly rendered than on our portrait. In the case of the Trajan Decius the irises of the eyes are marked by deeply incised circles, the pupils by drilled-out crescents. There is no moustache.

Similarly marked are the eyes of an elderly man on a herm in the National Museum in Athens (FIG. 2).[23] This head displays a less vivid realism than do the Trajan Decius and Piraeus portraits. But its hair and beard grow in the same way and are carved in the same technique and style; the upper lip is again clean-shaven; and we may assign this herm to roughly the same period.

The eyes of the Piraeus head are, as we have seen, plain. But for this we have an excellent contemporary parallel in the colossal statue of Balbinus in the same museum.[24] The absence in both cases of any indication of irises and pupils is perhaps less likely to be due to the influence of classical tradition than to failure on the sculptors' part to complete their handiwork so far as these details were concerned.

J. M. C. TOYNBEE

---

[21] e.g. on the Flavian reliefs from the Cancelleria and in the Louvre. Cancelleria: F. Magi, *I Rilievi flavi della Cancelleria* (1945) pl. 3; Louvre: E. Strong, *La Scultura Romana* i (1923) pl. 24.

[22] Ed. Stuart Jones, op. cit. 209–10, no. 70, pls. 50, 51; E. Strong, op. cit. ii (1926) pl. 78; Anderson, Roma, no. 1553; German Institute in Rome negative 4264.

[23] No. 75. German Institute in Athens negative 386.

[24] See n. 1.

NEMESIS: A MYCENAEAN SETTLEMENT NEAR THE MENIDI THOLOS TOMB

(PLATE 71)

THE site to be described lies on a low hill a little to the north of the small village or suburb of Nemesis, about 150 metres to the west of the main road from Patisia to Koukouvaounes, and 1 kilometre to east-south-east of the Mycenaean tholos tomb at Λυκότρυπα, which was excavated by the German Institute in 1879,[1] and is usually called the Menidi Tomb. The site at Nemesis is visible from the tholos tomb, and is separated from it by a gentle valley through which run, in a southerly direction, two streams with steep banks. The eastern stream is the river Kephissos, whose name goes back at least as far as the classical period.

The hill of Nemesis stands about 15 to 20 metres above the level of the surrounding land, and measures about 160 m. north-west to south-east × 120 m. north-east to south-west. The hill is an isolated outcrop of conglomerate rock, thinly covered with stony brown earth. It has been eroded over an area about 250 m. north–south × 50 m. east–west, so that its original size was considerably larger than at present, in all about 30,000 square metres. Mycenaean sherds were found over the whole of this area, though mainly in the eroded part, among the lumps of fallen earth and rock. Remains of rubble walling together with several Mycenaean sherds were found here, and also in the steep cliffs formed by the erosion on the west and south sides (this part of the hill has been undermined by recent excavation of the beds of grey clay, which here lie at between 2 and 3 metres below the original ground level). The ancient remains are particularly noticeable in the south-west angle of the cliffs (roughly in the centre of the part of the hill shown on PLATE 71*a*), where there is a greater depth of earth above the rock than is visible elsewhere on the hill. The Mycenaean deposit here appears to be over 1·0 m. deep. On the summit the depth of earth, where this can be estimated, is often less than 1·0 m. and seldom more than 2·0 m., and the natural rock protrudes in several places. No traces of ancient buildings were observed here, and there were fewer recognizable Mycenaean sherds.

Of the pottery recovered, over forty fragments, mostly painted, were identified as Mycenaean. The majority of these belong to the L.H. III period, and no L.H. I or II sherds were recognized. Over fifty other (plain) sherds, in a rather more worn condition, are almost certainly Mycenaean. One sherd of Neolithic 'Urfirnis' ware was found on the top of the hill, and there were also a few other fragments of handmade pottery, which may be of the Early Helladic period, as well as some chips of obsidian and brown chert. In addition over ten fragments of classical black-glazed pottery were found.

The hill, as has been said, is largely eroded, and the remains are not by themselves impressive; but the situation of the site and its character and size indicate that it was an important Mycenaean settlement, if not the seat of the royal dynasty for whom the Menidi tholos tomb was constructed. In the course of a thorough search over the country in the immediate vicinity of the Menidi tomb for at least 2 kilometres in every direction, I found no trace of any other Mycenaean site nor is there any other likely situation for one in this area. In 1879 Lolling conjectured that the broad hill called Yerovouno,[2] which lies 1¼ kilometres to the west of the tomb on the left

---

[1] Excavation report in Lolling, *Das Kuppelgrab bei Menidi* (1880). Description of pottery: Furtwaengler and Loeschke, *Mykenische Vasen* 39–40 and pl. 21; Wolters, *JdI* xiv (1899) 114 ff.; Stubbings, *BSA* xlii (1947) 2–4.

[2] The site called Gerovouni by Lolling, op. cit. 3.

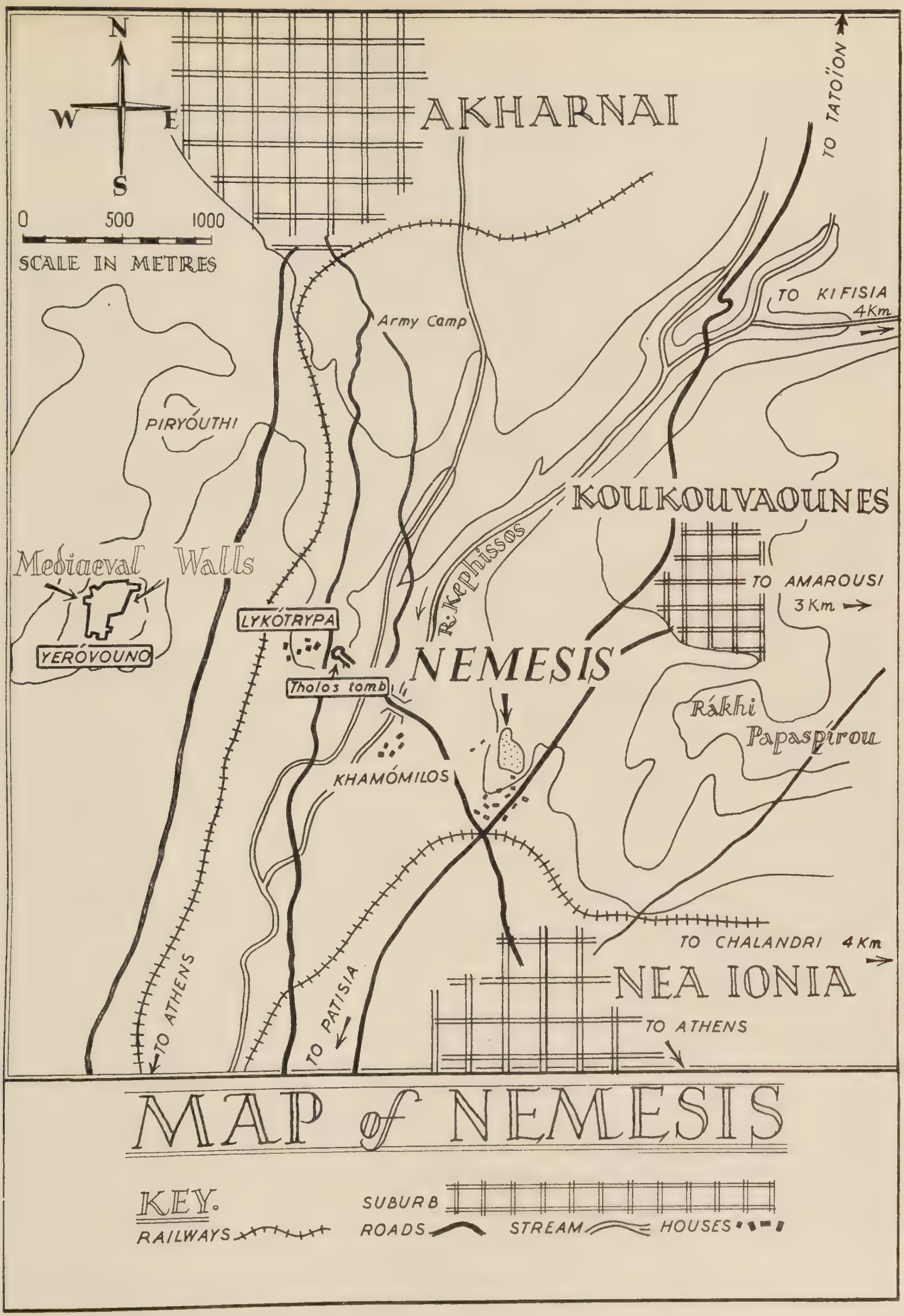

N
W
E
S
0 500 1000
SCALE IN METRES
AKHARNAI
TO TATOÏON
TO KIFISIA 4Km
Army Camp
PIRYOUTHI
KOUKOUVAOUNES
Mediaeval Walls
R. Kephissos
TO AMAROUSI 3Km
LYKÓTRYPA
YERÓVOUNO
NEMESIS
Tholos tomb
Rákhi Papaspírou
KHAMÓMILOS
TO CHALANDRI 4Km
NEA IONIA
TO ATHENS
TO PATISIA
TO ATHENS
MAP of NEMESIS
KEY.
SUBURB
RAILWAYS
ROADS
STREAM
HOUSES

Fig. 1

of the main road from Athens to Acharnai, was historically connected with the Menidi tomb, but on Yerovouno I found only classical and medieval sherds, and the visible remains of walling (FIG. 1) are of medieval date. In any case, this hill is not the sort of site where one would expect a prehistoric settlement.

Nemesis in the classical period lay in the territory of the deme of the Συπαλήττιοι, since an inscription was found here, dated to about 460 B.C.,[3] set up by the *κοινόν* of the Sypalettioi. The deme was a relatively small social unit and, since several classical sherds were found at Nemesis, it is probable that the village of the Sypalettioi was centred on the hill. The deme was in the trittys which included Athmonon (the modern Amarousi)[4] and Phlya (? at the modern Chalandri). The trittys lay to the south of that which included Kephisia, and was presumably divided from the trittys of Pedion (in which was the deme of Acharnai) on the west by the river Kephissos.[5] It is interesting to note that both Συπαληττός and Κηφισός are included in Haley's list of 'pre-Greek' place-names.[6]

POTTERY FOUND AT NEMESIS[7]

NEOLITHIC

One sherd of neolithic 'Urfirnis', of thin well-fired reddish clay, with a light burnish on the outside and the familiar 'pitting' marks inside.

LATE HELLADIC (PLATE 71*b*)

Most, if not all, of the sherds are of the L.H. III period.

Kylix. Five fragments: two from bases, two from rims, one of which is similar in shape to Furumark, *The Mycenaean Pottery*, fig. 17, 258 (L.H. IIIB); and one with horizontal bands of orange paint.

Deep bowl. Twenty-one fragments: eight from rims, one of which (*b*) has a pattern resembling Furumark's Motive 50 (L.H. IIIB); three from handles, all with traces of paint (*a*); two from raised bases with low stems (di. *c.* 0·08 m.); three from ringed bases, two of which have traces of paint (di. 0·06 m. to 0·08 m.).

Kylix or Deep Bowl. Fifteen fragments, mostly painted in monochrome orange or black paint inside and out.

Krater or Large Deep Bowl. One fragment from a base (di. *c.* 0·12 m.), painted monochrome orange inside and with orange band at base outside; one fragment with thick horizontal bands. Both are probably L.H. IIIB.

Jug. One fragment of neck with horizontal bands of orange paint. The clay in almost all cases was buff in colour, well fired, but rather 'soapy' in texture. Most of the fragments were worn, but a few show signs of having been polished, and most, if not all, were probably smoothed over after firing.

There was also plenty of coarse ware, mostly of hard gritty clay, from jars and large bowls, and several fragments of a pithos (probably L.H.) of pink clay with a white slip.

CLASSICAL

The sherds belonged, as far as could be ascertained, mainly to the fourth century B.C., but two at least were of fifth-century date.

R. HOPE SIMPSON

---

[3] *IG* i². 189.

[4] Leake, *Athens and the Demi of Attica* ii² (1841) 41 and 183; Loeper, *AM* xvii (1892) 411–12; Milchhoefer, *Untersuchungen über die Demensordnung des Kleisthenes* (1892) 30.

[5] I am very grateful to Mr. C. W. J. Eliot for help and advice concerning the locations of the Attic demes here mentioned.

[6] Haley, *AJA* xxxii (1928) 141–5 (the names being under Group B on his p. 144).

[7] Now in the sherd collection of the British School at Athens.

EXCAVATIONS AT PINDAKAS IN CHIOS

(PLATES 72–73)

PINDAKAS is a small and low hill lying about 1·5 km. from the harbour at Emporio in South Chios. It is at the foot of the hills which divide the modern town of Pyrgi from the Emporio valley, but it also commands access to the adjacent valley to the north, that leading to modern Kalamoti (see FIGS. 1 and 2). The position is, however, one which is better called convenient than strategic. The name must derive from πίδαξ, 'spring' or 'fountain', and, although there is no water on the hill itself, an excellent well lies close to its slopes on the west. Ano- and Kato-Pindakas have been distinguished, but the distinction is lost today, and Ano-Pindakas, rather nearer Emporio, is as bare of human habitation as Kato-Pindakas, which is our site.

Today the flat top of the hill is bare and rocky with scattered olive trees, though the fields around are rich in corn and mastika. Zolotas[1] had noted antiquities there but it is the great polygonal walls at the west which make two terraces of the hill-top that are the most conspicuous remains (PLATE 72*a–b*). It was on these two terraces that excavations were conducted by the writer in July 1954, in the course of the British School at Athens' excavations at Emporio. Sections were cut east–west through the upper and lower terraces, and north–south through the upper terrace (FIGS. 3 and 4, AA and BB) and these, with minor trenches and some ground observation, tell a clear story of the site's history and buildings.[2]

THE LOWER TERRACE AND SECTION AA (FIGS. 3 and 4)

The main wall of the lower terrace is constructed with polygonal blocks of locally hewn limestone, some of those at the corners having rectangular faces. At its north-western corner it stands still to a height of 2·90 m. but where the ground rises to the south less is preserved and the construction is less robust. About half-way up the west face of the wall there is a marked horizontal division running from the corner for about three-quarters of the way to the point at which the wall turns to the south-west. The construction above and below this line is the same, and it may represent no more than a phase in the construction, or possibly an early stage in which a lower terrace was intended at this point (PLATE 72*a*). Access was presumably from the south-west on to the broader half of the terrace.

The wall is about 2·50 m. thick and provided with a rough and inclined rear face (Section AA, FIG. 4). The fill of the wall itself is of stones and well-packed earth and, while its rear face overlies loose stones filling a cavity in the bedrock, the fill of the terrace behind it is composed of levels of earth and stones. Immediately below the surface soil of the terrace appears a level of hard, whitish earth and broken tiles which is associated with Late Roman buildings described below. Below these appeared the face and fill of another terrace wall (Period 1) which antedates the main terrace (Period 2); it runs obliquely to it and inside it, following more closely the natural contour of the hill. Its face is of roughly hewn stones with no careful joints; its fill is of stones and earth, the stones bearing the reddish appearance of having been fresh-cut from the hillside and never exposed to the weather. This wall, which appears again within the upper terrace (Section BB), is the earliest recognizable structure on the site.

---

[1] Ἱστορία τῆς Χίου i. 1, 460.

[2] The survey of the area on which FIGS. 1–3 are based was prepared by the late Dr. M. G. F. Ventris with the assistance of his wife.

The tumble of stone and earth which lies on the surface at the back of the lower terrace, and which represents debris from the Late Roman buildings and the upper terrace wall, was not cleared. The upper terrace at this point proved to be 1·15 m. thick and backed with a stone fill. Its rear face is better finished than that of the lower terrace in the same section, and the disparate thicknesses of the two walls is also worth remark.

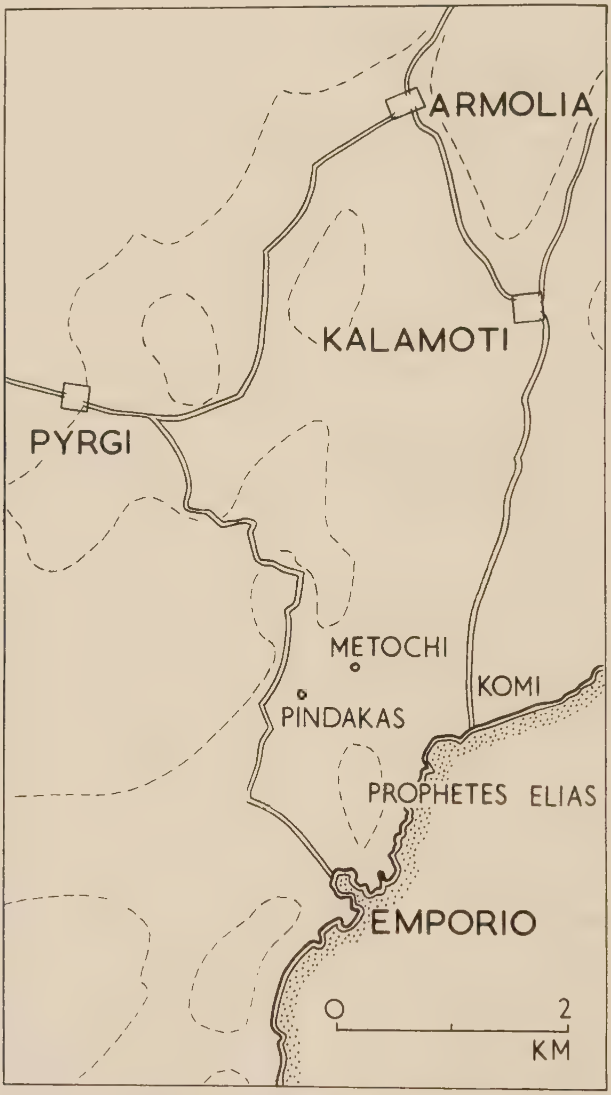


Fig. 1. Plan of the area Pyrgi–Kalamoti–Emporio

The only structures on the lower terrace are a number of walls (θ–μ) running approximately at right angles from the face of the upper terrace wall. They belong with the Late Roman level which appears in Section AA, and represent room walls of a house or houses which had been built in the convenient shelter provided by the terraces, and from the building material afforded by the ruined Greek houses and walls. Scraps of plaster were observed with the tile level between walls κ and λ but no regular floor was preserved. The life of these 'squatters' on the site is well illustrated by the group of objects found beside wall μ, which includes stones from an oil-press (below, nos. **8–12**). Other finds in the area of the Late Roman houses were a cooking-pot, a glass lamp and stud. The tiles are of the type found at Emporio and include a ridge tile with relief herring-bone pattern (below, no. **16**).

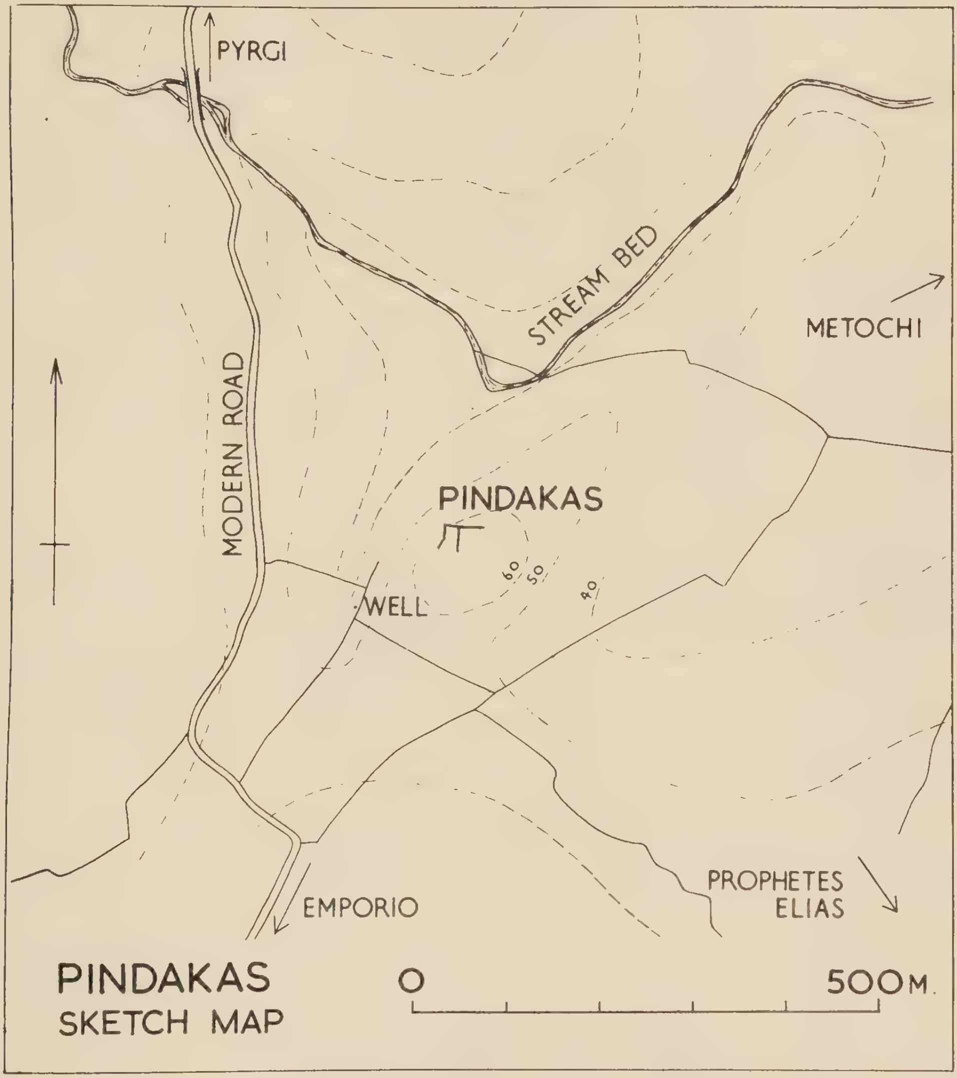

PYRGI
STREAM BED
METOCHI
MODERN ROAD
PINDAKAS
60
50
40
WELL
PROPHETES
ELIAS
EMPORIO
PINDAKAS
SKETCH MAP
0
500M.

Fig. 2. Plan of Pindakas hill and area

The Upper Terrace and Section BB (figs. 3 and 4)

The north wall of the upper terrace can be traced for 36 metres to the east, where it disappears on the gradually rising ground. In the section cut across it (Section BB) the relationship between it and the earlier terrace wall (Period 1) is much as it appeared in the lower

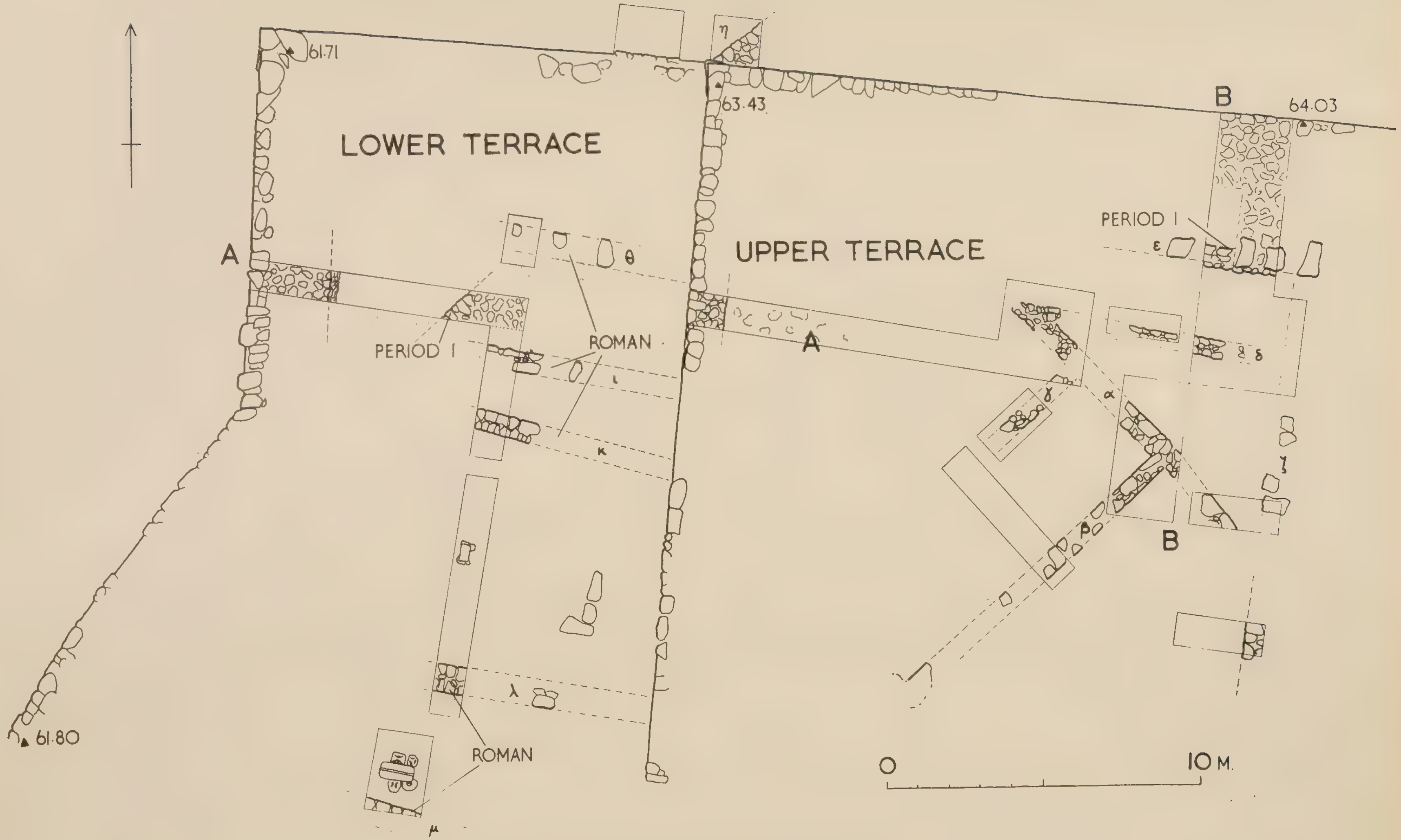

61·71
η
63·43
B
64·03
LOWER TERRACE
UPPER TERRACE
PERIOD I
ε
A
θ
PERIOD I
ROMAN
A
δ
ι
α
γ
κ
ζ
β
B
λ
ROMAN
μ
61·80
0
10 M.

Fig. 3. Pindakas. Plan of the excavations

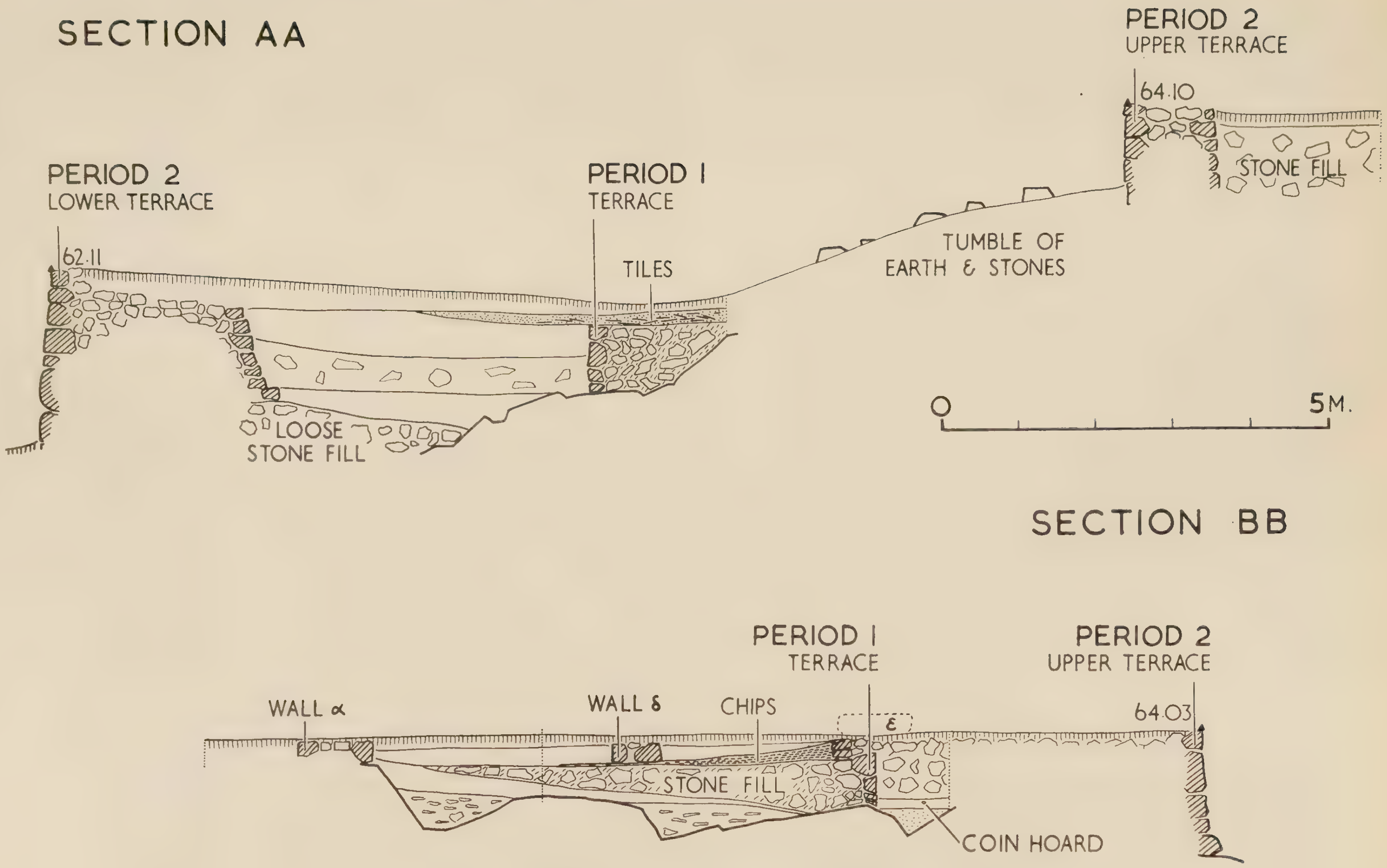

SECTION AA
PERIOD 2
LOWER TERRACE
62.11
PERIOD I
TERRACE
TILES
LOOSE
STONE FILL
TUMBLE OF
EARTH & STONES
PERIOD 2
UPPER TERRACE
64.10
STONE FILL
0
5M.
SECTION BB
WALL α
WALL δ
CHIPS
PERIOD I
TERRACE
ε
STONE FILL
COIN HOARD
PERIOD 2
UPPER TERRACE
64.03

Fig. 4. Pindakas. Sections AA, BB

terrace, with the difference that the face of the earlier wall appears within the thickness of the fill of the later wall and not behind it, and that it runs parallel to the later wall. Its direction, again, is apparently dictated by the contour of the hill. The unusual thickness of the Period 2 wall (4·80 m.) at this point on the hill where but little terracing was required may be explained by the fact that the rear edge of its stone fill seems to have served as foundation for a wall (ε) of which a few blocks are preserved. Below the fill of this Period 2 wall appeared a level of hard, greyish earth which seems to represent a ground level outside the earlier terrace of Period 1. At the top of this level was found a hoard of one silver and sixty-five bronze coins, apparently a purse dropped just before the fill of the later wall was packed in. The coins are published at the end of this report.

The fill of the Period 1 wall was of stones bearing the same raw and red appearance as those observed in Section AA. Immediately above lay a heavy level of stone chips to be associated with the construction of the Period 2 terrace and buildings upon it. Wall α represents a complex (with walls β and γ) which belongs to the earlier period. All that is preserved are the lowest stones of their foundations laid over the bedrock or on a stone fill. They lie so close to the surface that very little of the plan of the building can now be recovered, though it seems to have been one of some complexity. Abortive attempts to cultivate the hill-top in recent times have thoroughly disturbed any traces that there might have been of an original floor, and a mixture of Greek tile and coarse pottery occurred from the surface down to the bottom of the foundations. Architecturally all that might be associated with it or with its successor on the site are three fragments of roughly cut columns in local limestone (below, nos. **1**–**3**). A fragment of a white marble moulding was found just below the terrace to the north; its purpose is uncertain, though it suggests an Ionic architrave (below, no. **4**).

These walls (α, β, γ) are all that remain of the earliest house or houses on the site. In Period 2 we have noted traces of a heavy wall (ε) running parallel to the edge of the terrace, and isolated blocks (ȝ) may represent another wall of the same period which joins it at right angles. Nearly all these blocks appeared above the modern ground surface, and they give no clue to the nature of the original building. A short stretch of wall (δ) is also of this period (see Section BB, FIG. 4). It runs parallel to ε and to the terrace and could be an inner wall of the later building. Its construction is appreciably better than that of walls α–γ, the outer stones being roughly faced, but again only its lowest stones are preserved. The way in which wall δ breaks into the line of wall α suggests that the earlier structure had been completely replaced.

The construction of the upper terrace wall itself (Period 2) is as that of the lower, with great polygonal blocks, well fitted, and with some rectangular blocks at the corners (PLATE 72*b*). As the ground rises to the south and east the construction becomes less massive. At its north-western corner it stands to a clear height of 4 metres. A small trench at this point (η) revealed a low step running at 45° from the line of the terrace and abutting on to its lowest blocks. Its purpose is not clear; the apparent continuity of its line with that of the Period 1 wall within the lower terrace is quite fortuitous.

CHRONOLOGY

The complete absence of any pottery, fine or coarse, of the archaic period shows that Pindakas was not occupied before the fifth century B.C. In the fill of the Period 1 terrace wall were found fragments of Chian wine amphorae with a bulging neck, a type closely datable to the years around and before the middle of the fifth century.[3] The debris which was found by the foundations of the building on the upper terrace (walls α–γ) and belongs to its period of occupation, contains Chian amphorae-feet of later fifth- and early fourth-century types. Period 1 may then be thought of as beginning with the construction of the earlier terrace around or soon after 450 B.C. and continuing into the fourth century.

---

[3] On the dating of Chian wine amphorae see J. K. Anderson, *BSA* xlix (1954) 168–70, and for the amphorae with bulging necks in mid-fifth-century contexts, *Hesperia* xxii (1953) 105.

The coin hoard in Section BB was 'deposited' by about 350 B.C. (see below), as it contains a drachm of Maussollos in nearly mint condition. If my interpretation of the circumstances is correct, this should also be the date for the beginning of the construction of the Period 2 terrace wall at this point. The construction of the wall itself, 'quarry face' polygonal with occasional coursing, is met elsewhere in fourth-century Greece, for instance on the Attic 'Dema' wall, whose date has now been satisfactorily established.[4]

There is no distinctively Hellenistic pottery from the site, no moulded bowls, lagynoi, or late amphora-feet, so it seems unlikely that Pindakas continued occupied into the third century B.C., despite the appearance of a possible second-century coin (below, no. **18**). The construction of the later terrace must, therefore, have soon been followed by the abandonment of the site, and it is possible, in view of the lack of pottery and architectural remains, that the Period 2 buildings were in fact never completed.

The Late Roman pottery from the lower terrace is closely matched by the finds at Emporio and belongs to the sixth century A.D. The latest types found in the seventh-century destruction level of the fortified town at Emporio were not represented at Pindakas. A coin of Justin I (A.D. 518–27; below, no. **19**) found on the surface of the lower terrace lends confirmation to the pottery-dating for the Late Roman constructions there.

Summary and Conclusions

In the Greek period the site seems to have been chosen for its convenience of access to centres inland, to the sea, and to rich farmland near by. The Period 1 building on the hill must be regarded as a farm house. Its setting suggests something rather more important than some isolated dwelling; in particular the terrace wall which follows the contour of the hill implies a building of some size. The finds, plain roof tiles of canonic East Greek type, and coarse pottery with fragments of a millstone (below, no. **5**), support this interpretation; only a very little finer pottery, black or impressed ware, represents table crockery as opposed to storage vessels. There may have been outbuildings, even houses for other families, for sherds are scattered over the whole length of the hill for some 250 metres. The present bare surface yields only inconclusive evidence of other buildings: rock-cuttings and often illusory lines of stones.

Occupation began probably after the Persian Wars, at a time when Chios was enjoying relative prosperity as a leading member of the Athenian league, and when considerations of defence no longer demanded concentration in towns and villages. In the middle of the fifth century the farm house and terrace were built: perhaps the seat of a family which controlled and worked a considerable tract of land in the Emporio and Kalamoti valleys.

In the middle of the fourth century a radically new building plan was undertaken. The new building was to be erected on an east–west axis and raised on a higher and broader terrace with a rectangular outline (see FIG. 5). The north wall of this terrace was continued to the west to form a secondary, lower terrace which jutted out far beyond the line of the earlier platform. The earlier line seems, however, to have been preserved in the southern part of the new terrace wall, where it swings sharply away to the south-west, though it is not clear whether any part of the earlier wall was actually incorporated in it.

---

[4] J. E. Jones, L. H. Sackett, and C. W. J. Eliot, *BSA* lii (1957) 181, pls. 31–35.

The nature of the new building which was to stand upon the upper terrace and of which so little is extant (walls δ–ζ) is uncertain. We would naturally suppose it to have been a farm house, like its predecessor, but on a greater scale. The reorientation and rectilinear plans of terrace and foundations might, however, suggest that the site was to accommodate a temple; the suspicion only can be entertained, for the building seems not to have been completed, or, if it was a temple and completed, it was never used, for there is no votive material of any sort at hand. The premature abandonment of the site so soon after the inception of these new plans may be attributable to the disturbed and insecure conditions which prevailed in Chios and Ionia at the end of the fourth century.

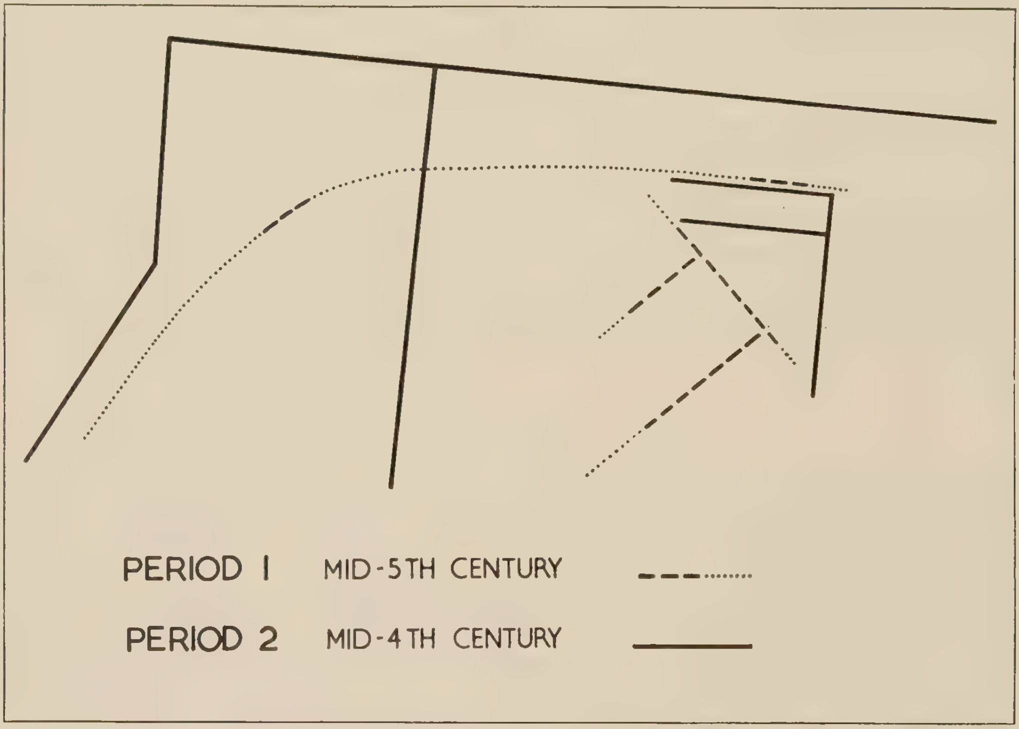


Fig. 5. Pindakas. Sketch of the main building periods

As an isolated but apparently rich farm house, it can be paralleled elsewhere in Chios in the fifth century B.C. and later, as at Delphinion and Viki in the north.[5] Nor was it the only such in the Emporio area, though no other farm houses datable as early as the fifth century have yet been identified. About 2 kilometres away to the south-west (at Kerathimi) stood a Hellenistic farm house in a valley leading to the south coast of the island, and there seem to have been others near the sea at Dotia, and behind Mt. Hephaistion, just west of Emporio. By A. Ermione near Pyrgi stood another, with equally impressive terrace walls, also bearing signs of reoccupation in the Late Roman period. On the hill immediately to the south-east of Pindakas there are a number of worked stones from a building of the Roman period whose exact location could not be determined. To the east, on the adjacent hill of Metochi, an archaic or classical sanctuary is suspected, and to the north of Metochi, on the slopes of the ridge which runs towards Kalamoti, a scatter of fine sixth-century sherds suggests a small archaic gravefield. Thus isolated houses or groups of houses in these valleys seem likely to have been at least as common in antiquity as they are today.

---

[5] Delphinion: J. Boardman, *BSA* li (1956) 41–54; Viki: ibid. 45.

Of the Late Roman buildings which enjoyed the shelter of the Greek terraces there is little to tell. It appears that they were abandoned at about the same time as the houses by the harbour at Emporio, by about the beginning of the seventh century A.D.; their inhabitants no doubt retired to the relative security of the fortress south of the harbour.[6]

The Finds

The pottery will be incorporated in the publication of that from Emporio. It is of little or no intrinsic interest, and the dating material, which has been mentioned with references in the description above, is better set in the broader context of the Emporio finds.[7] The minor objects which are published here seem more intimately to reflect the character of the site. Most are agricultural, a few domestic or architectural. The coin hoard is published separately at the end of this report.

1. Fragment of a limestone column. H. 0·35, D. 0·30. Built into the Late Roman wall μ; probably from one of the Greek buildings.

2. Fragment of a limestone column. H. 0·42, D. 0·38. Built into the Late Roman wall λ; probably from one of the Greek buildings.

3. Fragment of a limestone column. H. 0·16, D. 0·25. From the surface, below the terraces to the north; probably from one of the Greek buildings.

4. Fragment of a moulding in coarse, white marble (FIG. 6). H. 0·112. Two fasciae, well finished. Possibly part of an Ionic architrave, or door jamb. Found on the surface, below the terraces to the north. Probably from one of the Greek buildings.

5. Fragment of a mill stone in grey granite (FIG. 6). Original diameter *c.* 0·82, H. 0·19. Picked and grooved surface, the central hole was square in plan with sides of *c.* 0·12. From a surface level on the upper terrace. Greek.

6. Lead clamps from clay pithoi. A typical example is shown in FIG. 6. From the upper terrace, surface level.

7. Roof tiles. Those from the Greek farm house on the upper terrace are of the canonic East Greek type with ridged cover tiles. Most were painted in a dull brown.

8. *Orbis* of an olive-crusher, of light-grey granite (FIG. 6). H. 0·14, D. 0·58. From beside wall μ. Late Roman, 6th cent. A.D.

9. Boulder-weight, roughly shaped to a pyramid with two of the lower corners bevelled; pierced at the top; local limestone (FIG. 6). H. 0·45. From beside wall μ. Late Roman, 6th cent. A.D.

10. Boulder-weight; a natural stone but pierced; local limestone (FIG. 6). H. 0·40. From beside wall μ. Late Roman, 6th cent. A.D.

11. Boulder-weight; a natural stone but pierced; local limestone (FIG. 6). H. 0·47. From beside wall μ. Late Roman, 6th cent. A.D.

12. Stone block, roughly rectangular, with a shallow longitudinal groove on one face and a small circular sinking at the centre of one end. 1·17×0·46×0·55; the groove *c.* 0·075 across and 0·05 deep. See PLATE 72*c*. Found beside wall μ. Late Roman, 6th cent. A.D.

13. Two iron nails, square in section with roughly square heads. L. 0·076 and 0·073. From the surface near wall θ. Late Roman, 6th cent. A.D.

14. Circular glass stud; pale green. D. 0·013, thickness 0·005. Possibly an inset for jewellery; cf. *Corinth* xii. 223, *EADélos* xviii, pl. 90, 794, 796–8. From the surface near wall θ. Late Roman, 6th cent. A.D.

15. Spherical blue-paste bead. H. 0·006, D. 0·008. From the surface near wall θ. Late Roman or modern.

16. Roof tiles. From the Late Roman levels on the lower terrace. All fragments are of the commonest type met at Emporio, crude descendants of the classical tiles. No complete dimension is preserved at Pindakas. One ridge tile bears the relief herring-bone pattern which is also met at Emporio.

17. Bronze coin. D. 0·009, weight 0·56 g. (broken). Illegible. Probably Chian, 4th cent. B.C. From the surface of the lower terrace.

18. Bronze coin. D. 0·015, weight 3·08 g. ↖. Chian, cf. *Num. Chron.* xvi (1916), pl. 11, 3–5, 9, 10, there dated to the 2nd cent. B.C. The magistrate's name is illegible. From the surface of the lower terrace.

19. Bronze coin. D. 0·03, weight 14·25 g. ↙. Byzantine, of Justin I (A.D. 518–27), cf. *BMC* i. 14, no. 30. Minted at Constantinople. From the surface of the lower terrace.

---

[6] Preliminary reports of the British School's excavations here appear in *JHS* lxxiv (1954) 163; lxxv (1955), Suppl. 23.

[7] Apart from wine amphorae and pithoi there were fragments of fifth–fourth-century B.C. black painted fish-plates, cups (impressed ovules and rouletting), kantharoi (fourth century), and a plate with impressed palmettes. The late pottery comprised fragments of Late Roman C bowls, spiral-incised amphorae, and a cooking-pot; also part of a glass lamp.

The only objects of note are the group from the Late Roman level beside wall μ (nos. **8–12**). For their relative positions in the ground see PLATE 72*c*. The boulder-weights must be from an oil-press, of a type apparently well known in antiquity. The grooved block (no. **12**) is possibly one of the *arbores* from the same press, or simply a channel. For the *orbis* from an olive-crusher (no. **8**) see D. M. Robinson and J. W. Graham, *Olynthus* viii. 337 f.

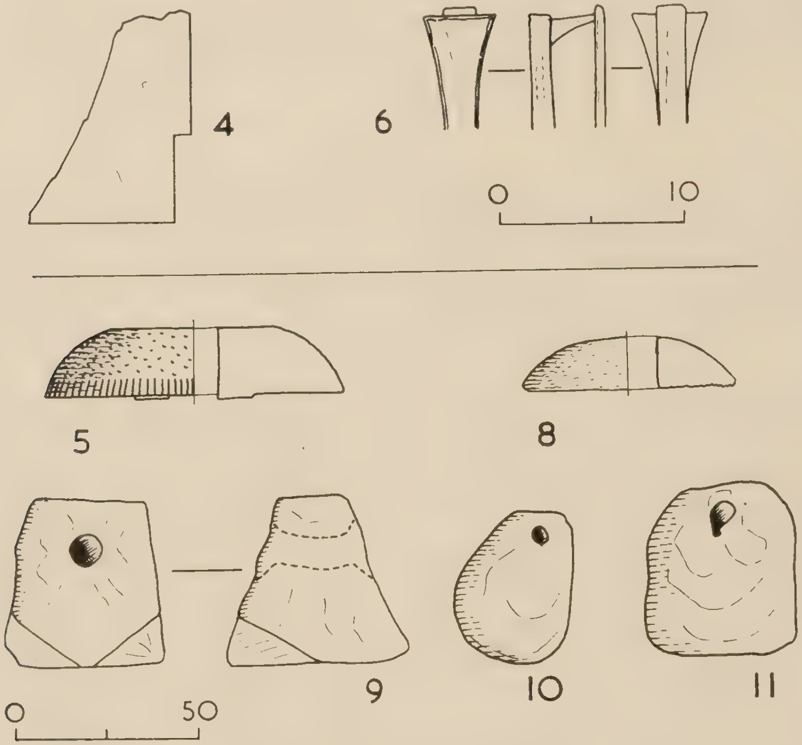


FIG. 6. PINDAKAS. MINOR OBJECTS

THE COIN HOARD

For the position in which the coins were found see Section BB, FIG. 4. They lay close together in a mass less than 3 centimetres across and must have been in a small cloth or leather bag of which no trace remained. It has then the character rather of a dropped purse than a true hoard. This is significant, for it implies that the coins were in circulation together, which cannot safely be said of a hoard.

A catalogue of the contents appears below. Selected coins are illustrated, enlarged two diameters, on PLATE 73. The coins are in Athens.

Silver

1. Drachm of Maussollos of Caria (377–353 B.C.). 1·4 cm., 3·5 g. ↗ . Excellent condition, but the reverse is somewhat corroded. PLATE 73.

Obv. Head of Apollo, inclined right.

Rev. Zeus Labrandreus standing right. Before him ΜΑVΣΣΩΛΛΟ (few of the letters are distinct). Behind, possibly letters or an emblem.

Bronze: Group A

2–15. Chian. Average weight 1·32 g.; heaviest (**9**) 1·72 g. All in an extremely worn condition. Grouped here by the details preserved most clearly.

Obv. Sphinx to the left; before her chest a bunch of grapes. On some (**2–5**) a clear raised disk.

Rev. Wine amphora in a circle of dots (but see **8**).

2. 1·1 cm., 1·2 g. ↙ . A clear raised disk. An unusually broad amphora.

3. 1·15 cm., 1·16 g. →. A clear raised disk. Narrower amphora.

4. 1·0 cm., 1·32 g. ↑. As 3.

5. 1·0 cm., 1·6 g. ↑ . As 3. The amphora has unusually broad handles.

6. 1·05 cm., 1·12 g. ←. Faint raised disk. A clear incuse circle reverse; possibly a letter at the left of the amphora.

7. 1·1 cm., 1·22 g. ↑ . Faint raised disk. The amphora foot is a distinct knob. Clear incuse circle.

8. 1·0 cm., 1·3 g. ↓ . A ring of circles, not dots.

9. 1·0 cm., 1·72 g. ↑ . A thick flan (0·25 cm.). PLATE 73.

10. 1·0 cm., 1·7 g. ↓ . Slight raised disk.

11. 1·0 cm., 1·3 g. ←. A thickset sphinx with head well back.

12. 1·0 cm., 1·15 g. ←. PLATE 73.

13. 0·95 cm., 1·1 g. ↑ .

14. 1·15 cm., 1·25 g. ↑ .

15. 1·05 cm., 1·35 g. ↑ .

Bronze: Group B

16–25. Chian. Average weight 1·37 g.; heaviest (**18**) 1·45 g.

Obv. Sphinx to the left on a ground line; a bunch of grapes before her chest.

Rev. Wine amphora. Left ΧΙΟΣ; right ΑΘΗΝΑ

16. 1·1 cm., 1·41 g. ↑ . The Η opposite the amphora shoulder.

17. 1·15 cm., 1·4 g. ↑ . As **16.** PLATE 73.

18. 1·2 cm., 1·45 g. ↑ . As **16.** PLATE 73.

19. 1·2 cm., 1·4 g. ↑ . Larger letters, the initial Α opposite the handle bend of the amphora, not above it.

20. 1·15 cm., 1·42 g. ↑ . As **19.**

21. 1·2 cm., 1·3 g. ↓ . A distinctly smaller amphora.

22. 1·25 cm., 1·22 g. ↑ . As **21.**

23. 1·1 cm., 1·25 g. ↑ . Much smaller letters.

24. 1·2 cm., 1·42 g. ↓ . Larger sphinx, amphora, and letters. The Η below the amphora shoulder.

25. 1·2 cm., 1·4 g. ↑ . A very small sphinx. Small letters close to the amphora.

26–37. Average weight 1·345 g.; heaviest (**29**) 1·55 g. As **16–25**, but the name ΙΣΧΙΜΑ.

26. 1·1 cm., 1·4 g. ↑ . Large amphora and letters. PLATE 73.

27. 1·1 cm., 1·42 g. ↓ . As **26.**

28. 1·1 cm., 1·35 g. ↑ . As **26** but with thicker letters.

29. 1·1 cm., 1·55 g. ↑ . Medium-sized amphora. The Χ of ΙΣΧΙΜΑ above the amphora shoulder.

30. 1·2 cm., 1·4 g. ↑ . As **29.**

31. 1·15 cm., 1·3 g. ↓ . As **29.**

32. 1·1 cm., 1·25 g. ↓ . As **29** but a larger sphinx and the Χ nearer the shoulder of the amphora.

33. 1·15 cm., 1·3 g. ↑ . Reverse as **32.**

34. 1·2 cm., 1·4 g. ↑ . Χ beside the amphora shoulder.

35. 1·2 cm., 1·32 g. ↑ . A larger sphinx and letters, but smaller amphora.

36. 1·15 cm., 1·15 g. ↑ . Small sphinx, amphora, and letters. PLATE 73.

37. 1·1 cm., 1·3 g. ↑ . As **36.**

38–47. Average weight 1·33 g.; heaviest (**43**) 1·52 g. As **16–25**, but the name ΑΠΟΛΛΩ.

38. 1·25 cm., 1·3 g. ↑ . A large amphora.

39. 1·2 cm., 1·2 g. ↑ . As **38**, but small letters and the Ο in ΧΙΟΣ higher. PLATE 73.

40. 1·2 cm., 1·4 g. ↑. Smaller amphora. The Ο in ΧΙΟΣ below the amphora shoulder.

41. 1·15 cm., 1·4 g. ↑ . As **40.**

42. 1·1 cm., 1·3 g. ↓ . As **40**, but the Ο of ΧΙΟΣ beside the amphora shoulder.

43. 1·2 cm., 1·52 g. ↑ . As **42.**

44. 1·2 cm., 1·4 g. ↑ . As **42** but a larger sphinx and the Χ nearer the amphora shoulder. PLATE 73.

45. 1·1 cm., 1·2 g. ↓ . Small sphinx, amphora, and letters.

46. 1·1 cm., 1·4 g. ↓ . As **45.**

47. 1·2 cm., 1·2 g. ↓ . As **45.**

48–55. Average weight 1·4 g.; heaviest (**50, 51**) 1·5 g. As **16–25**, but the name ΙΠΠΙΑΣ.

48. 1·1 cm., 1·25 g. ↑. The second Ι of ΙΠΠΙΑΣ opposite the amphora shoulder. PLATE 73.

49. 1·1 cm., 1·4 g. ↓ . As **48** but the Ι a little lower.

50. 1·1 cm., 1·5 g. ↓ . As **49** but smaller letters.

51. 1·15 cm., 1·5 g. ↑ . As **50.** PLATE 73.

52. 1·1 cm., 1·4 g. ↓ . Smaller sphinx and letters, set far from the amphora.

53. 1·3 cm., 1·35 g. ↑ . The second Ι of ΙΠΠΙΑΣ set well below the amphora shoulder.

54. 1·15 cm., 1·45 g. ↓ . As **53** but a smaller amphora.

55. 1·05 cm., 1·35 g. ↑ . Smaller sphinx, amphora, and letters, set far from the amphora.

56–66. As above, but the names are completely illegible through corrosion (not wear, as they are otherwise in very good condition, except **66**). In style and date they must belong with **16–55.**

56. 1·15 cm., 1·3 g. ↑ . PLATE 73.

57. 1·1 cm., 1·1 g. ↑ . Clear incuse circle reverse.

58. 1·05 cm., 1·2 g. ↑ .

59. 1·1 cm., 1·2 g. ↑ .

60. 1·15 cm., 1·3 g. ↑ .

61. 1·2 cm., 1·15 g. ↑ .

62. 1·2 cm., 1·45 g. ↑ .

63. 1·1 cm., 1·2 g. ↑ .

64. 1·15 cm., 1·08 g. ↑ . PLATE 73.

65. 1·2 cm., 1·2 g. ↑ .

66. 1·1 cm., 1·3 g. ↑ . The obverse is somewhat worn.

Complete illustration of these coins seems unnecessary, but the notes above give an indication of the great variety of dies in use.

The use of the same die is difficult to trace on the sphinx obverses of the bronze coins in Group B, but easier with the inscribed reverses. Yet even here there are few duplicates to be found and many marked differences in the size of the letters, their placing and the size (though not the shape) of the amphora. In the catalogue I have distinguished the main types as well as

I can but the day for attempting the doubtfully rewarding task of tracing die sequences in minor Chian bronze is still far off.

J. Mavrogordato, who has studied these coins,[8] distinguishes three types of our Group B: (1) with an incuse circle reverse, which appears on none of ours as clearly as on the example he illustrates; (2) smaller, with smaller types and no grapes; and (3) larger and thinner with later letter forms (Σ). Ours show no great differences in size of coin or thickness, but a considerable range in the size of the sphinx and particularly the amphora. None lack the grapes, which seem also to appear on all of Group A. Two-thirds have die positions ↑, the rest ↓, and in so far as comparative wear is visible the A⊙HNA and IΣXIMA coins seem older.[9]

Of our Group A bronze coins Mavrogordato also distinguished three main types:[10] one with the sphinx on a raised disk, a second with A and Σ on either side of the amphora, a third without the dotted circle or letters on the reverse.[11] I could not distinguish in our hoard any bearing letters, or even any without at least a probable dotted circle. Only with more specimens in good condition can any sure classification be formulated. The raised disk is most noticeable on **2–5**, the incuse circle reverse on **6** and **7**, and on **8** the frame is of small rings rather than dots (perhaps a faulty or dirty die); the amphora handles on **5** are unusually broad. On **2** the amphora itself is broader, and this may for this reason be the earliest; its die position too is less regular than that of the others,[12] which themselves have more varied die-positions than the coins of Group B.

Maussollos was the first Carian dynast to mint coins on the Chian standard, and the presence of his drachm (**1**) here illustrates both this and his interested interference in the affairs of Chios during his rule. Fourteen of the fifty silver coins from the late fourth-century hoard from Pityos in Chios were Carian (see below), and only nineteen Chian.

For the chronology of the coins of Chios the only detailed and illustrated discussions are those by Mrs. Baldwin-Brett in *American Journal of Numismatics* xlviii (1914) and J. Mavrogordato in successive numbers of *Numismatic Chronicle* xv–xviii (1915–18).[13] The only important, or rather published, source of information for the bronze coinage of the island, with which we are primarily concerned, is the hoard of 225 coins (149 of them Chian bronze) found in a buried jug[14] at Pityos in the north of the island and, on their arrival in Berlin, published by A. Löbbecke in *Zeitschrift für Numismatik* xiv (1887) 148–57.[15] The latest datable coins were two drachms of Pixodaros of Caria, in mint condition. Of the Chian bronze coins forty-one correspond with our Group A, seventy with our Group B, with names of ten different magistrates including the four represented in our hoard, and nine of larger module with the names on a cross, a type which must be dated with the latest in the hoard, as Mavrogordato saw, and which do not concern us here.

Mavrogordato also accepts the evidence of the Pixodaros coins for the terminus of the hoard, which he supposed to be of the early years of Macedonian occupation. The earliest bronze, like our Group A, he dates to the period between the outbreak of the Peloponnesian War and the

---

[8] *Num. Chron.* xv (1915) 426, pl. 19, 14–16.

[9] For the restoration of the names Αθηνα[γορας], Απολλω[νιδης], and Ισχιμα[χος], ibid. 422, 426 f.

[10] Ibid. 384 f.

[11] He has also a variety (his no. 46*a*): a solitary specimen with the sphinx to the right. In studying the worn examples in our hoard I was more than once erroneously led to think that we had parallels for this, but the worn outline of a sickle-wing is much the same as that of the sphinx's body inverted.

[12] Ibid. 393.

[13] See also P. Gardner, *JHS* xl (1920) 160 ff., 'The Financial History of Ancient Chios'.

[14] *Zeit. f. Num.* xiv (1887) 148 has a drawing of the jug (it does not exactly correspond with the measurements quoted in the text). The type cannot be closely enough dated as yet to be relevant to the discussion.

[15] He miscounts the total of bronze coins (ibid. 157); cf. also S. P. Noe, *Bibliography of Greek Coin Hoards*² 74, no. 240; Mavrogordato, *Num. Chron.* xv (1915) 431 f.

Chian revolt from Athens (431–412 B.C.), and the larger coins, like our Group B, with the magistrates' names, from 412 B.C. through the first three quarters of the fourth century. Mrs. Baldwin-Brett, however, is sceptical about the existence of bronze coins with a true reverse type (the amphora) at the same time as silver coins which retain the archaic incuse squares in a more and more stylized form—a form which is in fact practically a type, as both she and Mavrogordato observe. She would prefer to put the Pityos bronze into the last quarter of the fourth century, although only by assuming that people take care of their pounds first and hoard silver before the bronze small change, and she still uses the association with the Pixodaros coins to give a 'well-established' date for some silver drachms.[16] On the whole Mavrogordato's account, at least of these bronze coins, seems the preferable, and the Pindakas find does a little to confirm his classification, though his dates are still too high.

The Maussollos drachm (**1**) is in exceptionally fine, almost mint, condition. Maussollos ruled Caria until his death in 353 B.C., so a date about the middle of the fourth century should not be too late for the deposition of the coins. Historical considerations do not help here, as the coins seem not to have been deliberately buried, but lost.

The most worn specimens of the Chian bronze are those of Group A (**2–15**). The dates proposed by earlier writers for coins of this type have been mentioned above. That they might be as early as the late fifth century is suggested by the height of the raised disk on the obverse, a feature which appears also on the earlier Chian tetradrachm and drachm issues, which certainly start well before the end of the century. It is suggested too by the shape of the amphora (to which I will return) and the extremely worn condition of the coins. The significance of this factor depends on the certainty of the deposit date of the coins. This, and its appreciably earlier date than that of the Pityos hoard, can be demonstrated. The following factors can be taken into account: first, that forty of the coins bear magistrates' names, yet only four different names are represented and in numbers proportionally greater than those of the same name in the Pityos hoard, where six other names are found on coins of the same type (and four more on larger and later coins); secondly, *ex silentio*, the absence of the larger bronze coins of the type found at Pityos;[17] thirdly, the condition of the Maussollos drachm.

So few names on so many coins may suggest that we are near the beginning of their appearance on bronze coins. But if this is so, and even if the date of the deposit is brought back to the earlier years of the second quarter of the fourth century, we may still suspect a gap in the sequence between our Groups A and B. This is significantly confirmed by the condition of the coins. Group B are all in near-mint condition; the illegible coins (**55–66**) belong with them and their condition is due to their burial and not to wear, as the parts which are not corroded are in perfect condition. Only one (**66**) shows some signs of wear. The contrast with the desperately worn and dumpier Group A is striking, and there would seem to be grounds for the theory that there was a break in the minting of bronze coins before those which first bore magistrates' names. That there was such a break is suggested too by the weights of the coins. Group B, all in good condition, average 1·35 g., the best weighing around 1·5 g. Group A, despite their worn state, average little less (1·32 g.), while three of them, though worn, are heavier than any of the later group (1·6, 1·7, 1·72 g.); the blanks for the earlier group were perhaps weighed less carefully (if at all) before striking, but it seems likely that their average intended weight was slightly higher than that of Group B.[18]

---

[16] Op. cit. 52. Her general account of the development of the silver coinage in Chios is convincing, but the arguments about dating seem often muddled. Mavrogordato takes pains to relate the coinage to the history of the island.

[17] One might add the absence of any restruck coins such as are found in many collections of Chian fourth–third-century bronze, and the open forms of the letters ξ, M.

[18] Mavrogordato, op. cit. 394, 403.

This dating for the Group A coins, possibly before 500 B.C., is in keeping with what little is surmised or known about the beginnings of bronze coinage and the appearance of magistrates' names on coins of other Ionian and Greek states in Asia Minor, in most of which these phenomena are dated towards the beginning of the fourth century.[19]

The objection that it is unlikely that a true reverse type, the amphora, would occur on bronze coins while the silver retained a form of the archaic incuse squares, is hardly valid, because the stylization of the silver reverse makes it practically a type, because Chian conservatism in coining would resist a change in the traditional treatment of the silver while the bronze was an innovation anyway, and perhaps because the need was felt to display both the civil and commercial blazons of the island on the smallest coin.[20]

There is now, however, another criterion for the dating of Chian coinage which could not be applied by Baldwin-Brett or Mavrogordato. The development of the shape of the Chian wine amphora, which appears on the coins, is now well established, particularly in the fifth and fourth centuries, by the excavations in the Athenian Agora, at Old Smyrna, and in Chios.[21] From the bulbous-necked amphorae which appear on the latest of the Chian fifth-century didrachms it is clear that this issue's end must correspond closely with the date of the Athenian currency decree,[22] just after the middle of the century, and that the new tetradrachm and drachm issue did not immediately succeed it.[23] The style of the fine sphinxes on the tetradrachms confirms the dating, and suggests that the first tetradrachms to bear magistrates' names belong early in the last quarter of the fifth century; of the corresponding drachms some bear monograms. The Chian revolt from Athens in 412 B.C. had no effect on the coinage that we can detect, unless it was the occasion for a brief and somewhat premature issue of bronze coins such as those of our Group A.[24]

The group of tetradrachms which are stylistically the latest[25] carry sphinxes whose set of head and hair-style place them close to the creatures on our Group B bronze coins. The amphorae on them have (when clearly enough preserved) a distinct conical foot which, on the real amphorae, has disappeared by the end of the fourth century. Now too the drachms begin to carry magistrates' names,[26] including the only three met on the latest tetradrachms and two that occur on bronze in our hoard.[27] Of the drachms we may note that only those bearing the same names as the latest tetradrachms also have striated squares on their reverse,[28] a conscious imitation of the larger coins. The other drachms, which have stippled squares,[29] might all post-date the last known tetradrachms, and among them can be distinguished some on which the sphinxes have wings exactly like those on our bronze of Group B.[30] It would seem then that the introduction of these bronze coins with magistrates' names followed the abandonment of the inscribed tetradrachms. The Pindakas find suggests that this could have happened about midway through the first half of the fourth century; possibly as early as the Peace of Antalkidas. Before the Pityos hoard was deposited (about 330 B.C.) the bronze coins like our Group B were replaced or joined by others of larger module with elaborate reverses[31] reminiscent of the archaic cross and squares of the silver coins. We may suspect that by now the drachms were no longer being made and that this bronze represents all that was minted in this disturbed period. Silver may have been in part provided by the Carian issues (on the Chian standard) which are so prominent in the Pityos hoard. Later, but still within the fourth century, begin the bronze coins of the same size but with the amphora reverse,[32] and possibly the few drachms 'of Attic weight' with devices in circles and, for the first time in Chian silver, an amphora reverse.[33]

---

[19] *B.M.C. Ionia, passim.* For a more recent study see J. G. Milne, *Kolophon and its Coinage* 49–59, where it is suggested that the bronze coinage may have begun after the Peace of Antalkidas in 387/6 B.C. Possibly the same event occasioned the resumption of bronze coinage in Chios.

[20] A plausible explanation for the retention of the incuse squares is given by I. Benson in *Num. Review* xiii (iv. 1) Jan. 1947, 26, for which see also Schol. Ar. *Av.* 158.

[21] See above, p. 300, n. 3. Miss V. Grace is preparing a detailed study of the development of the amphora shape and its relationship to the representations on coins.

[22] For the coins, Baldwin-Brett, op. cit. pl. 3. On the dating of the bulbous-necked amphorae see above, p. 300, n. 3. On the currency decree see E. S. G. Robinson, *Hesperia* Suppl. viii. 324 ff.; H. B. Mattingly, *Proc. Class. Ass.* 1957, 31 f., prefers a later date.

[23] The odd number of Chian silver drachms (489) recorded in the accounts of the Treasurers of the Other Gods at Athens for 429/8 B.C. (*IG* i^2 310, 112) could not have been made up with the tetrobols issued with the didrachms, and proves that the drachm and tetradrachm issue was already current. The unique electrum stater in Berlin (Baldwin-Brett, op. cit. pl. 4, 11; Mavrogordato, op. cit. pl. 18, 5) seems to belong to the intermediate period, both from the shape of the amphora on it and from the wreath and sphinx's wing, which are treated in the earlier manner, while the creature's general build is closer to the later tetradrachms. This supports the view that the Athenian currency decree did stop the Chian silver, though not for long. Robinson, op. cit. 330, proposes this date for the coin, but the existence of silver coinage at the same time is also implied.

[24] Mavrogordato reports examples of this type with A and Σ on either side of the amphora (op. cit., 385, no. 47). If this implies contemporaneity with the drachms with monograms, it is a striking confirmation for the dating of this bronze so early. The name Ασμενος occurs on a tetradrachm of this period (Baldwin-Brett, op. cit., pl. 5, 3).

[25] Ibid. pl. 6, 1–8.

[26] Ibid. pl. 6, 9–26.

[27] Of course we cannot be sure that the names are of the same person or that the coins are of the same period of office.

[28] Ibid. pl. 6, 9–12.

The Pindakas find can in this way contribute a little to the understanding of the history of Chian coinage in the fourth century. The motives behind the changes have yet to be fully understood, and, with the only detailed accounts of the coins now some fifty years old, the study of new material will, it is hoped, make possible a much more accurate account both of the development of the coinage and the sequence of magistrates' names.[34] The remarks above can only be regarded as a reappraisal of the earlier-known material in the light of one or two new factors.

JOHN BOARDMAN

---

[29] Ibid. pl. 6, 13–26.

[30] Ibid. pl. 6, 18–20, 22–25 and pp. 34 f., figs. 14, 15. The end feathers begin to separate and a straight line of feathers across the wing replaces the lengthwise triple division. The new arrangement recalls that of the archaic didrachms.

[31] Mavrogordato, op. cit. pl. 19, 17–19.

[32] *Num. Chron.* xvi (1916), pl. 10, 1–4.

[33] Ibid. pl. 10, 5–7. They might begin even earlier. I am not sure that the small bronze coins ibid. pl. 10, 8–9, need be dissociated from those like our Group B, despite their apparent crudity.

[34] For example, Noe records other hoards of bronze from Chios in Athens, unpublished. A number of additions can also be made to the magistrates' names listed by Mavrogordato.

I. GENERAL INDEX

Alyattes 24–27, 128–9, 148.
Anderson, J. K., *Old Smyrna: the Corinthian pottery* 138–51.
Arrowheads, Smyrna 24, 129–34.
Ayia Galini (Crete), topography 278–80.

Bath-tubs (Smyrna) 16, 33.
Beads, amber 238–9.
Boardman, John, *Excavations at Pindakas in Chios* 295–309.
——, *Old Smyrna: the Attic pottery* 152–81.

Cemetery, Minoan, on Upper Gypsades 194–262; children's, at Smyrna 44–46.
Chersonisos (Crete), Roman buildings at 266–73.
Claudius, portrait-head of in Piraeus Museum 285–6.
Coffin, wooden (Minoan) 218.
Coin-hoards, Greek (Chios) 304–9; Greek and Persian (Smyrna) 30.
Cook, J. M., *Old Smyrna 1948–1951* 1–34.
Crete, undersea exploration round 263–80.

De Jong, Piet, and Sinclair Hood, *A Late Minoan III 'kitchen' at Makritikhos (Knossos)* 182–93.

Erythrae, conjectured site of 21–22.

Fish-tanks, Crete 264–6, 270, 275.
Fortifications, early Greek 114–20.
Fountain-house, Old Smyrna 58–64.

Gyges 125

Hood, Sinclair, *A Minoan shaft-grave in the bank with Hogarth's tombs* 283–4.
——, *A Minoan shaft-grave on the slopes opposite the Temple Tomb* 281–2.
—— and others, *A Minoan cemetery on Upper Gypsades* 194–262.
—— and John Leatham, *Sub-marine exploration in Crete, 1955* 263–80.
— and Piet de Jong, *A Late Minoan III 'kitchen' at Makritikhos (Knossos)* 182–93.
Homer 22–23.
Hope Simpson, R., *Nemesis: a Mycenaean settlement near the Menidi tholos tomb* 292–4.
Houses, Greek, Old Smyrna 14–15, 29, 55–56, 84–87.
Huxley, George, and others, *A Minoan cemetery on Upper Gypsades* 194–262.

Inscriptions on vases 150, 154–5, 166.
Istrokles, 7th–c. vases signed by 16.

'Kitchen', L.M. III at Knossos 182–93.
Knives, bronze, Minoan 232–4.
Kothon, identification of 143–4.

Larisa-on-Hermos, site of 20 n. 47.
Larnakes, clay, Minoan 188, 227–32.
Leatham, John, and Sinclair Hood, *Sub-marine exploration in Crete, 1955* 263–80.
Lydos 163.
Lyre, seven-stringed 17.

Makritikhos, 'kitchen' at 182–93.
Mausollos, drachma of 304–6.
'Meles' river 23, 39.
Mimnermus 27–28.
Mochlos (Crete), topography 273–5.

Nemesis (Attica), Mycenean settlement at 292–4.
Nicholls, R. V. *Old Smyrna: the Iron Age fortifications and associated remains on the city perimeter* 35–137.
Niobid painter 30, 170–2.

Pindakas (Chios), excavations at 295–309.
Pins, Minoan 235–7.
Population of Ionic cities 19–22.
Portrait-heads, Roman, in Piraeus Museum 286–91.
Pseira (Crete), topography 275–8.

Razors, bronze, Minoan 234–5.

Sandars, Nancy, and others, *A Minoan Cemetery on Upper Gypsades* 194–262.
Sea-level, alterations of in Mediterranean area 11–13, 39–40, 61, 68, 265–6.
Selinous, foundation of 26–27, n. 71.
Shaft-graves, Minoan, in Crete 280–4.
Siege-mound, Smyrna 24–25, 88–91.
Smyrna (New), foundation of 34.
Smyrna (Old), 'acropolis' 5, 134; Aeolic foundation 13; bath-tubs 16, 33; BF pottery, 152–70; capture by Lydians 23–27; children's cemetery 44–48; city walls 35–137; date of destruction 148; earthquake(?) 43, 134; EC pottery 144–8; foundation of New Smyrna 34; fountain-house 58-64; 'Fourth-century Fort' 5, 134; gate, north-east 68–72; Homer 22–23; houses 14–15, 29, 55, 84–88; Lydians 14, 23–27, 31; MC pottery 149–51; 'Meles' river 23; Mimnermus 27–28; mudbrick, use of 47–48, 55–58, 71–75, 91, 100–5; PC pottery 138–43; Persian coins from 30; PG pottery 10–11; population 19–22: prehistoric period 9–10; RF pottery 170–5; road to Sardis 18–19; siege-mound 24–25, 88–91; 'Small Fort' 5, 134; temple 17, 23, 75–81; territory 17–19; topography of area 1–7; village period 29–34; Walls 1–4 122–36; water-spout, lion's head type, from Bornova 4; wine-jars 14, 17.
Sophilos 29, 154–62.
Statuette, Minoan, fragment of 193.

Temple, Old Smyrna 75–81.
Threptus, C. Memmius, portrait-head of in Piraeus Museum 288–91.
Toynbee, J. M. C., *Four Roman portraits in the Piraeus Museum* 285–291.
Typhon 147–8.

Walls, ancient 35–137, 295–300.
Water-spout, lion's-head, marble 4.
Wedding-processions on vases 158-60.
Werner, A. E., *Report on amber beads from Aegean sites* 261–2.

II. INDEX OF GREEK WORDS

εὐχή 289 *ὕψιστος* 289

III. INDEX OF CLASSICAL AUTHORS

Columella viii. 17. 1, 265.
Euripides, *Hel.* 722–5, 159.
Herodotus i. 16. 2, 24; 25. 1, 25 n. 67; 143, 22.
Mimnermus Frs. 9, 14 Bergk, 27–28.
Pausanias vii. 5. 12, 18; ix. 29. 4, 28.
Ps.-Scylax 97c–98, 32 n. 91a.
Strabo xiv. 646, 31.
Varro iii. 17. 3, 265.

IV. MUSEUM INDEX

İzmir Mus. 331 and 712, 4; Fuar Mus. 3332, 154–62; 3361, 170–2; 3369, 170.
London, B.M. 1963, 289; F154, 173.
Piraeus Mus. E3, 286–8; E4, 285–6; E717, 288–91; S7, 291.
Rome, Vatican Mus. 551, 288.

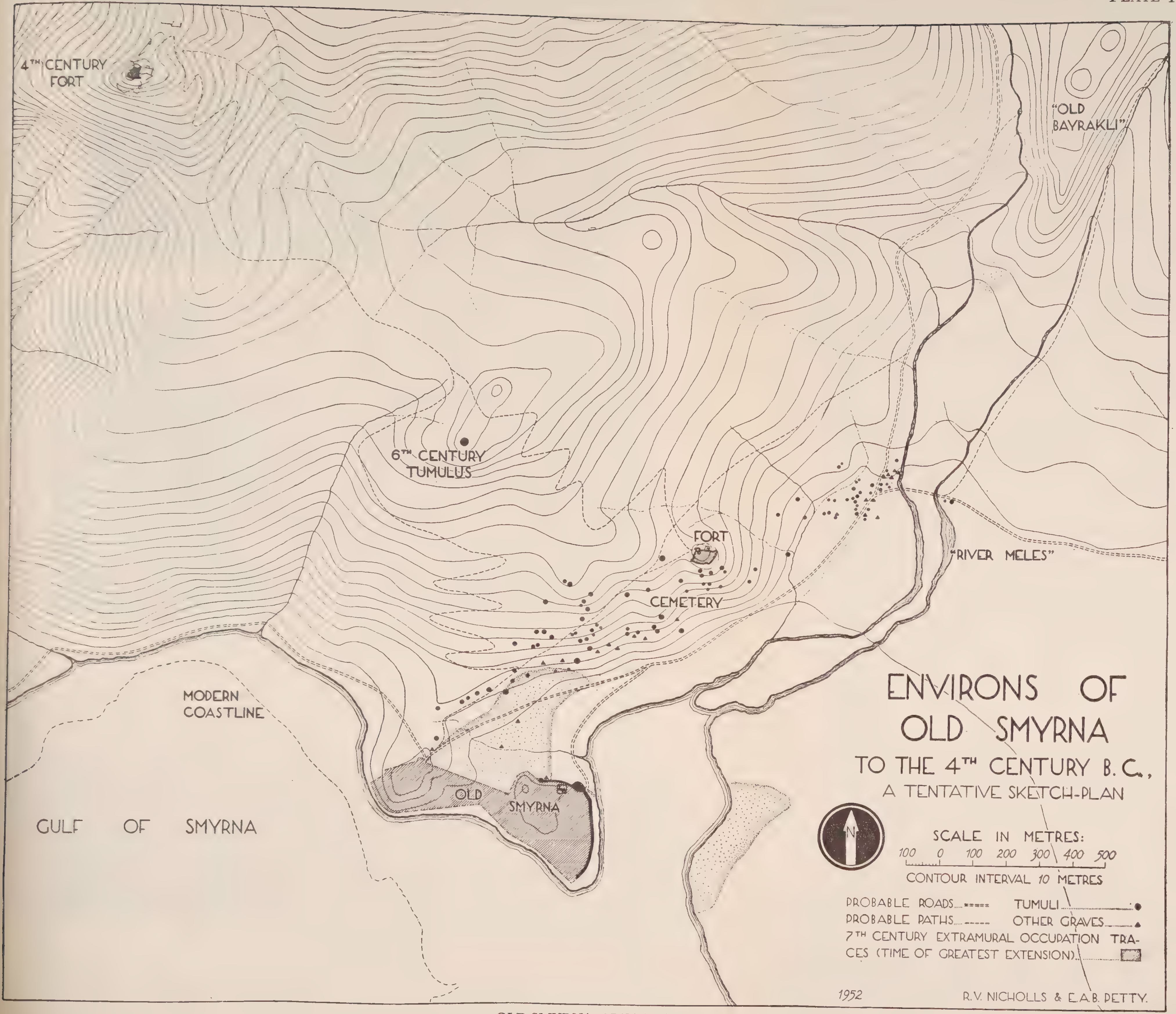
V. EPIGRAPHICAL INDEX

IG ii^2. 1672, 102 n. 75.
IG ii–iii. 3^2. 4737, 289.
SIG^3 136, 33.

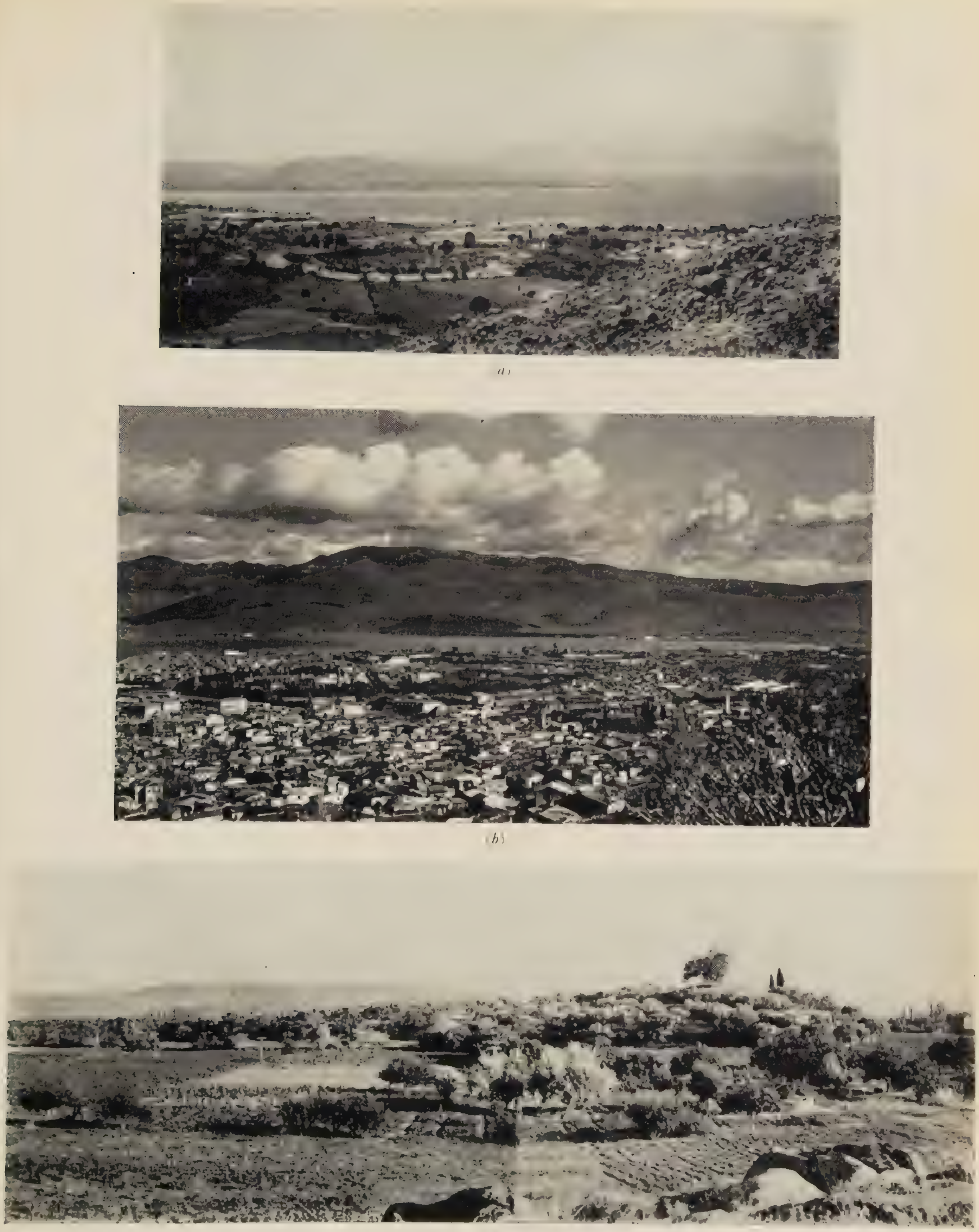
VI. INDEX OF EPIGRAPHICAL PROPER NAMES

Ἀθηνα⟨γόρας?⟩ 305.
Ἀπολλω— 305.
Θρέπτος, Γ⟨αίος⟩ Μέ⟨μμιος⟩ 289.
Ἱππίας 305.
Ἰσχίμα⟨χος⟩ 305.

PRINTED IN GREAT BRITAIN
AT THE UNIVERSITY PRESS, OXFORD
BY VIVIAN RIDLER
PRINTER TO THE UNIVERSITY


4TH CENTURY FORT
"OLD BAYRAKLI"
6TH CENTURY TUMULUS
FORT
"RIVER MELES"
CEMETERY
MODERN COASTLINE
OLD SMYRNA
GULF OF SMYRNA
ENVIRONS OF OLD SMYRNA
TO THE 4TH CENTURY B.C.,
A TENTATIVE SKETCH-PLAN
N
SCALE IN METRES:
100 0 100 200 300 400 500
CONTOUR INTERVAL 10 METRES
PROBABLE ROADS
TUMULI
PROBABLE PATHS
OTHER GRAVES
7TH CENTURY EXTRAMURAL OCCUPATION TRACES (TIME OF GREATEST EXTENSION)
1952
R.V. NICHOLLS & E.A.B. PETTY.

OLD SMYRNA, AREA PLAN



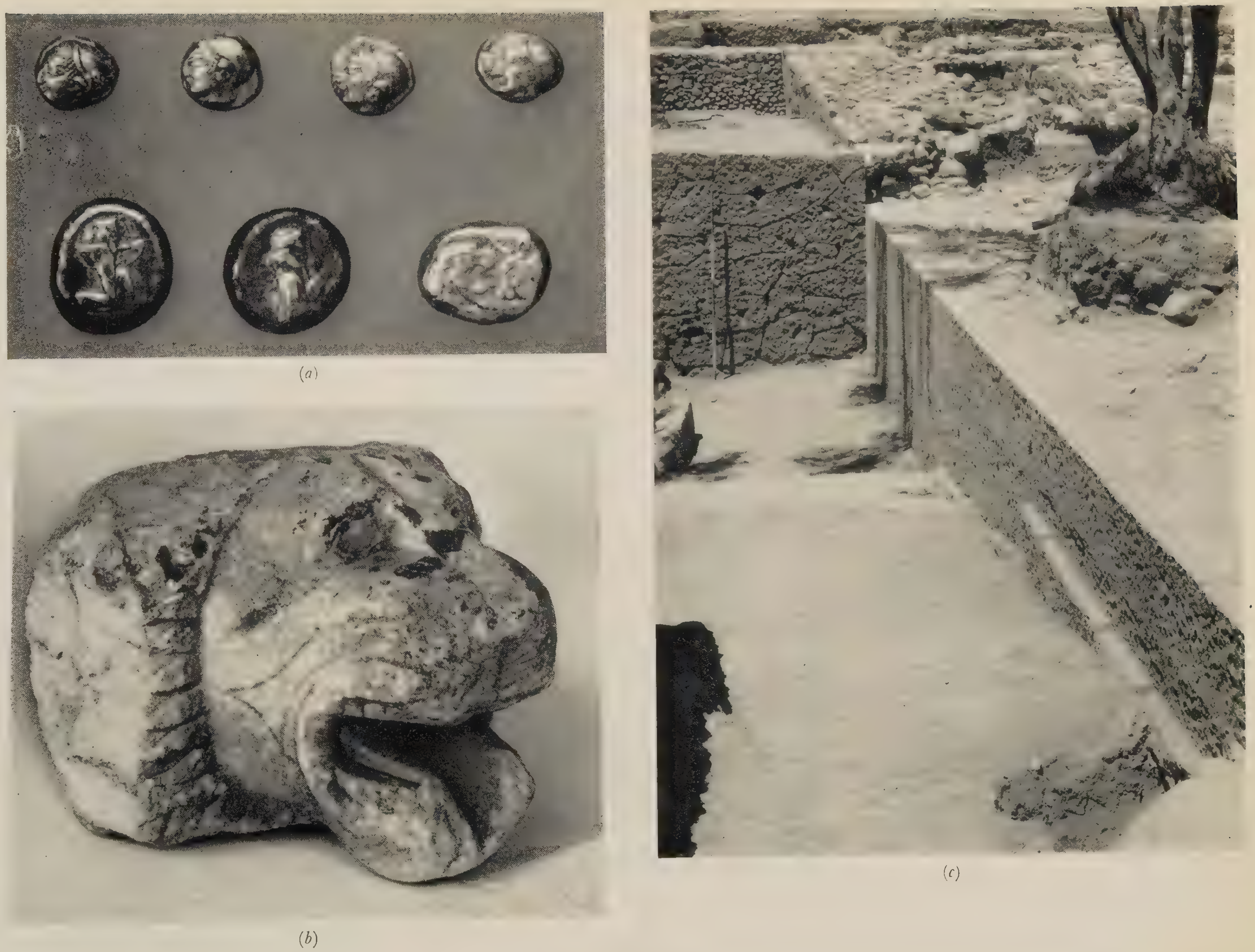
(*a*)

(*b*)

(*c*)

OLD SMYRNA

(*a*) VIEW OVER SITE FROM NORTH-EAST. (*b*) VIEW TO NORTH FROM THE PAGOS. (*c*) VIEW OF SITE FROM NORTH.



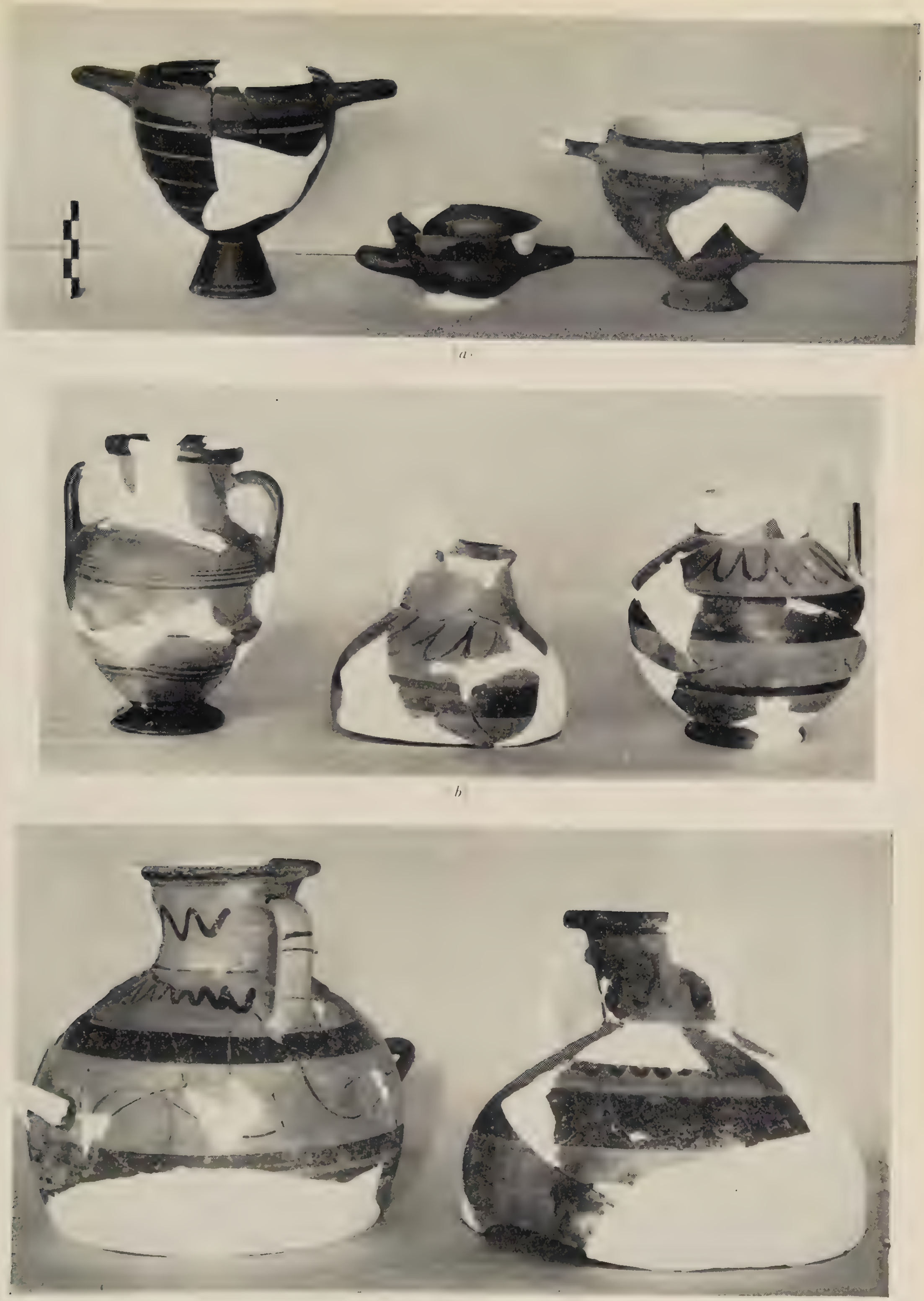
(*a*)

(*b*)

(*c*)

OLD SMYRNA

(*a*) PART OF HOARD OF SILVER COINS. (*b*) MARBLE SPOUT FROM BORNOVA. (*c*) STEPPED INCLINE BY TEMPLE PLATFORM.

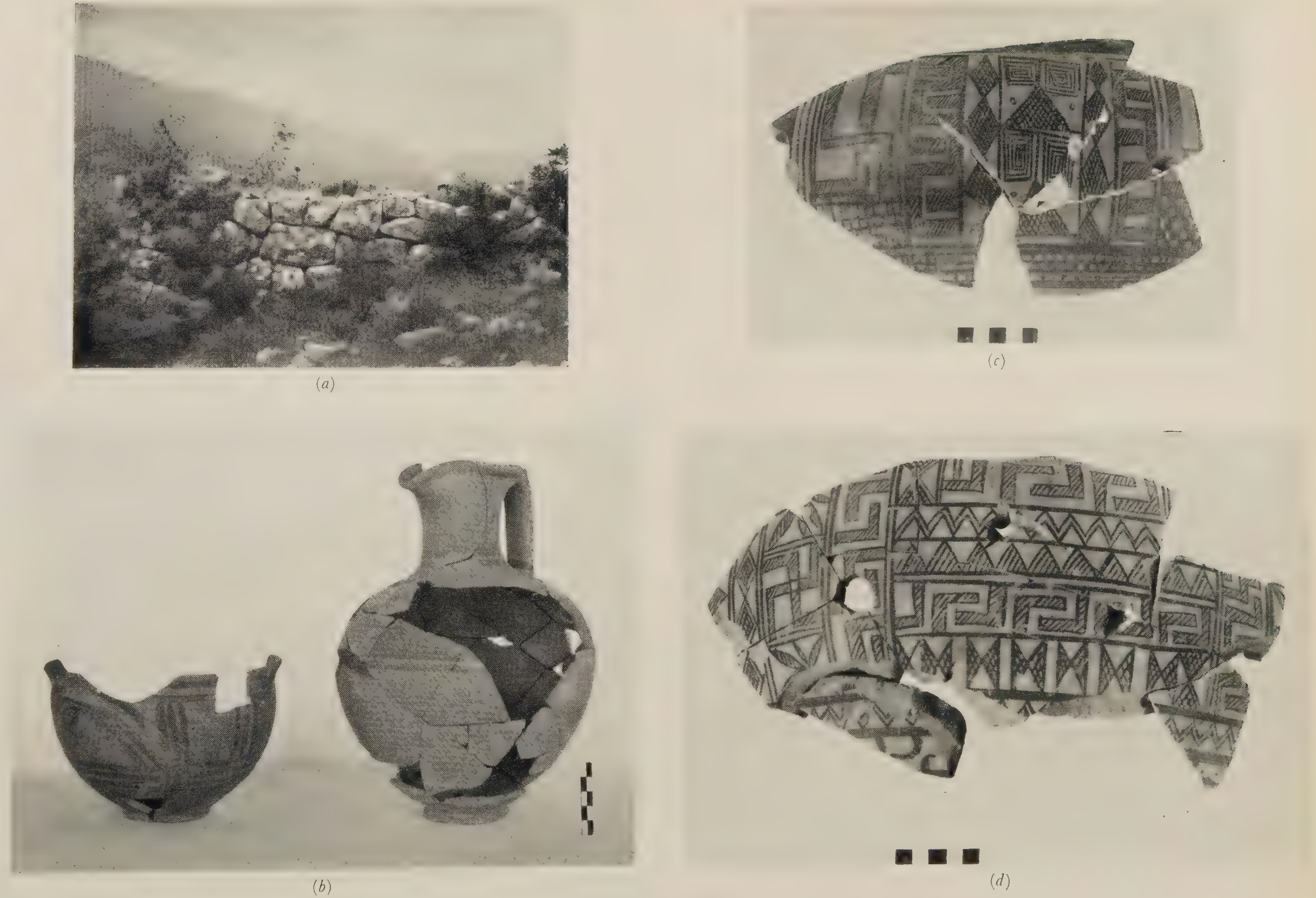


a

b

c

OLD SMYRNA
(*a–c*) SIXTH-CENTURY POTTERY.



(*a*)

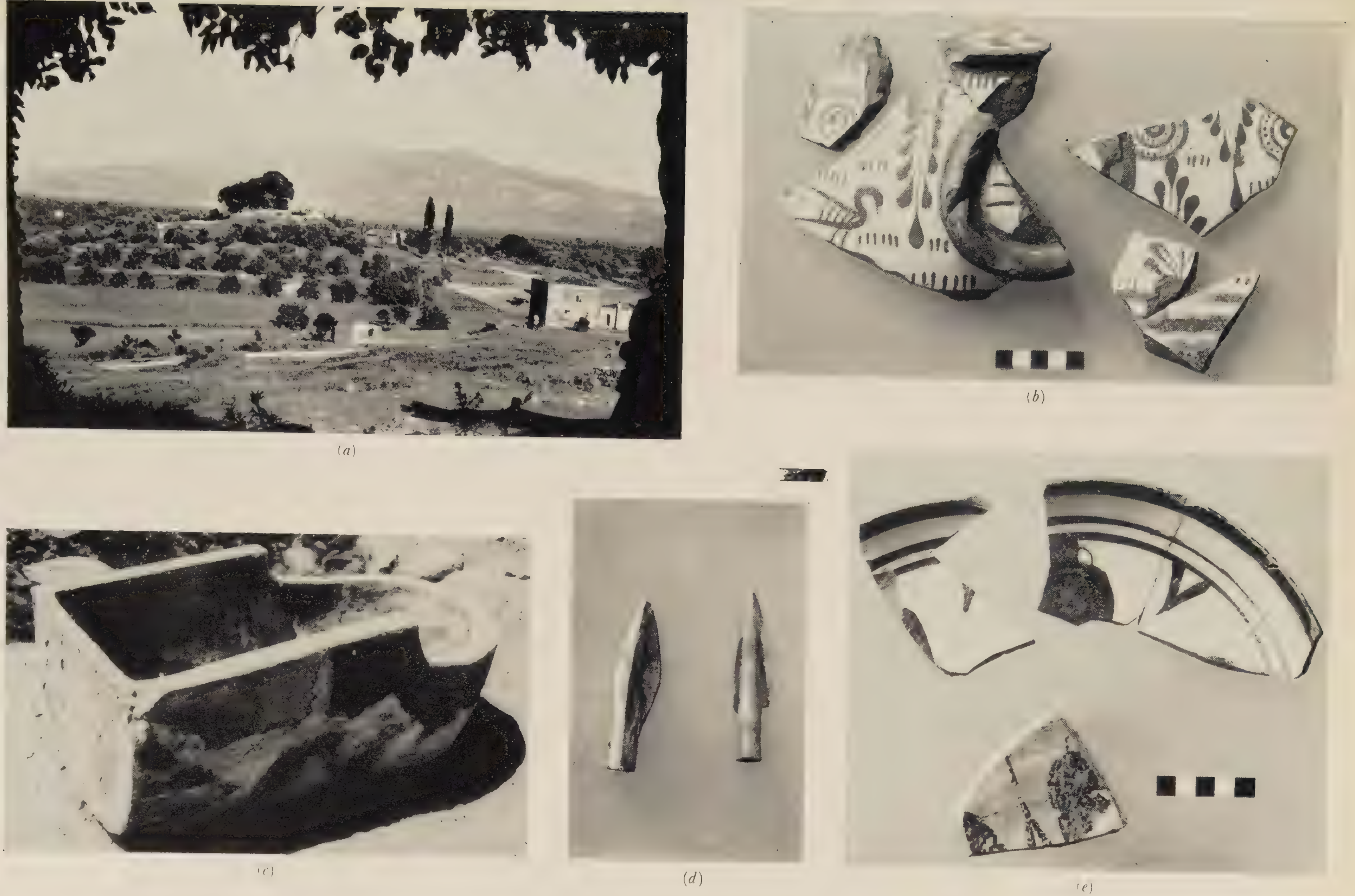
(*b*)

(*c*)

(*d*)

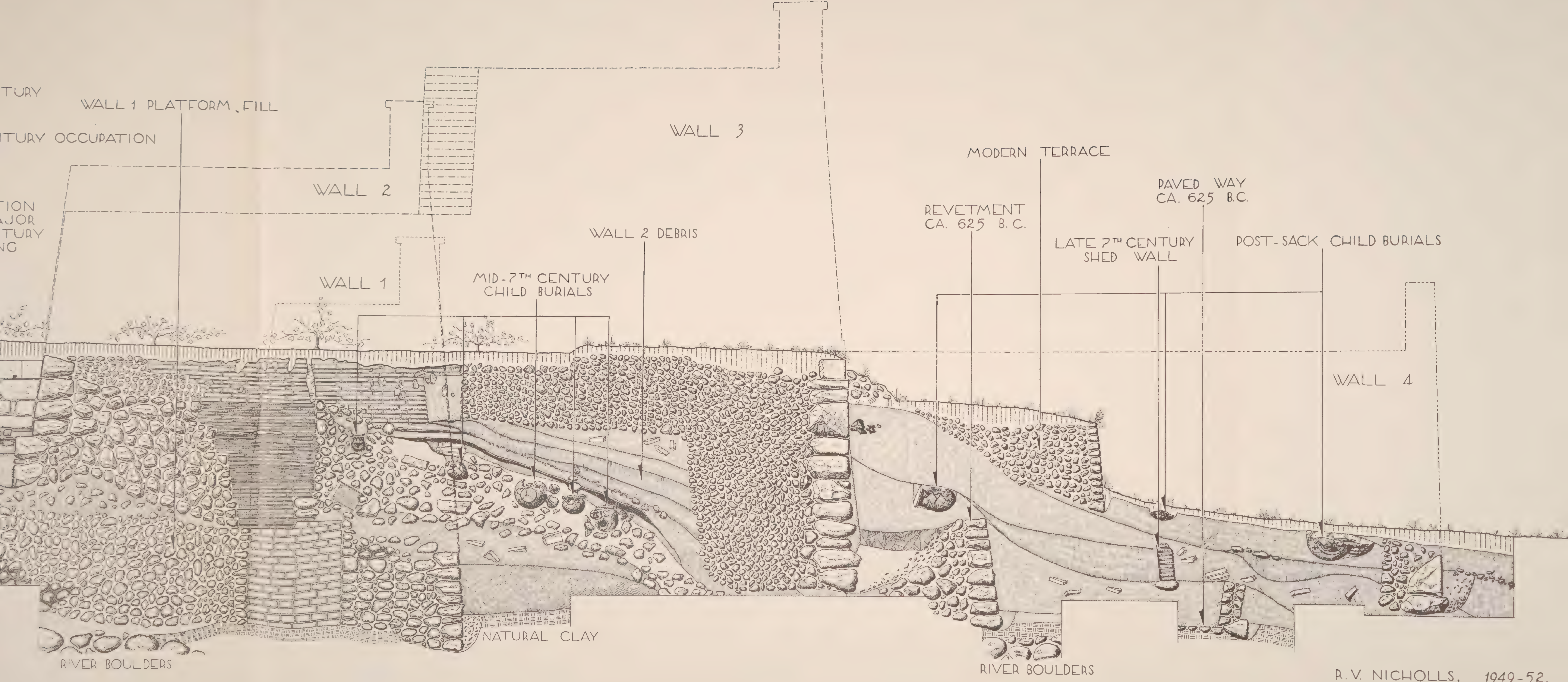
OLD SMYRNA

(*a*) ARCHAIC WALL AT BEL KAHVE. (*b*) PROTOGEOMETRIC VASES FROM EARLIEST GREEK STRATA.
(*c–d*) EIGHTH-CENTURY IONIC VASE-FRAGMENTS.



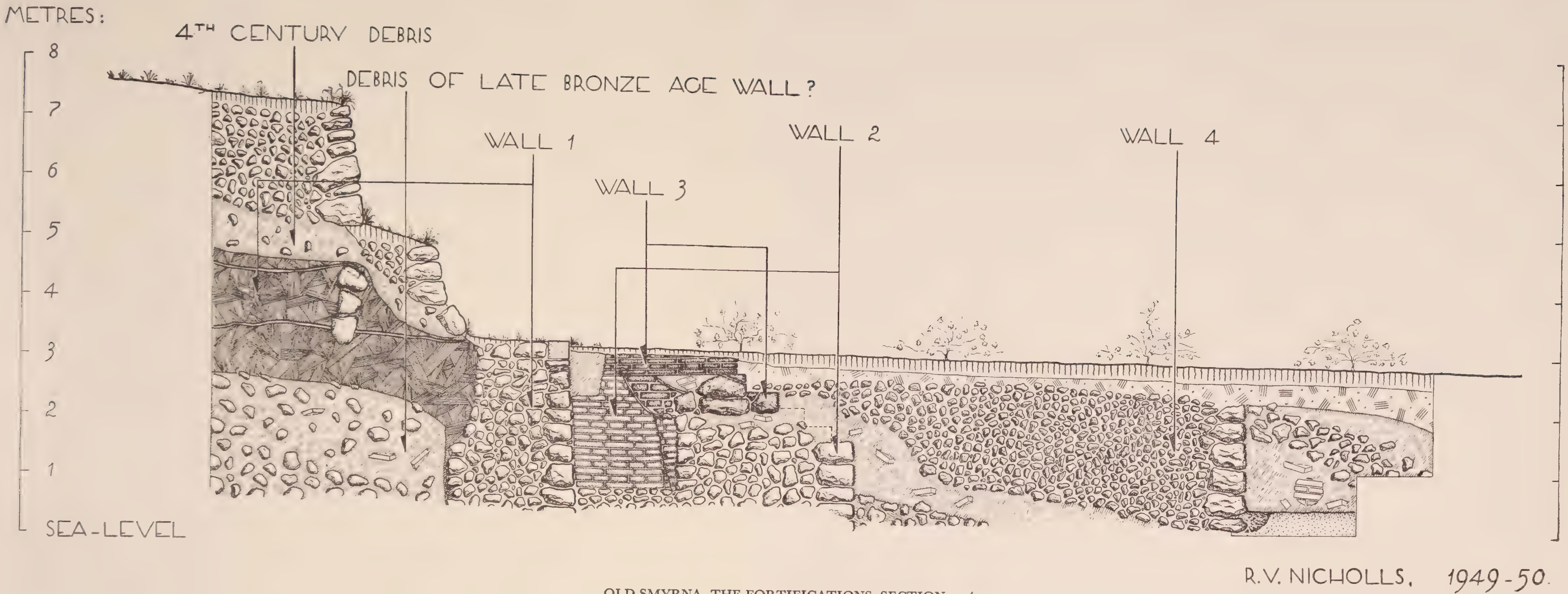
OLD SMYRNA

(*a*) THE MOUND FROM THE WEST. (*b*) FRAGMENTS OF MID-SIXTH-CENTURY DINOS. (*c*) SEVENTH-CENTURY TERRACOTTA BATH. (*d*) TRIANGULAR AND LEAF-SHAPED ARROWHEADS. (*e*) FRAGMENTS OF ARCHAIC BOWLS WITH DECORATION OF AMPHORAE.

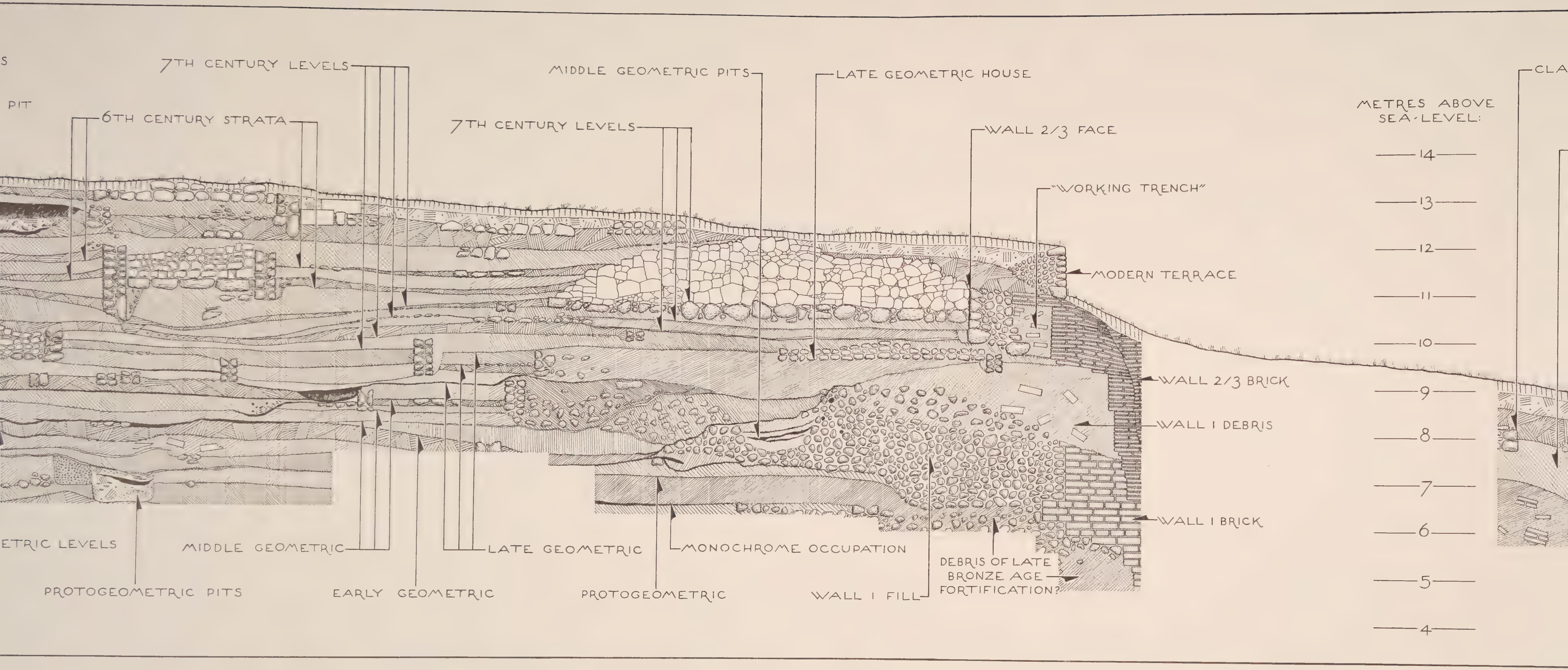

TURY
WALL 1 PLATFORM FILL
ITURY OCCUPATION
TION
AJOR
TURY
NG
WALL 2
WALL 3
WALL 1
MID-7TH CENTURY
CHILD BURIALS
WALL 2 DEBRIS
MODERN TERRACE
REVETMENT
CA. 625 B. C.
PAVED WAY
CA. 625 B.C.
LATE 7TH CENTURY
SHED WALL
POST-SACK CHILD BURIALS
WALL 4
NATURAL CLAY
RIVER BOULDERS
RIVER BOULDERS
R.V. NICHOLLS, 1949-52.

OLD SMYRNA: THE FORTIFICATIONS

SECTION λ–λ′

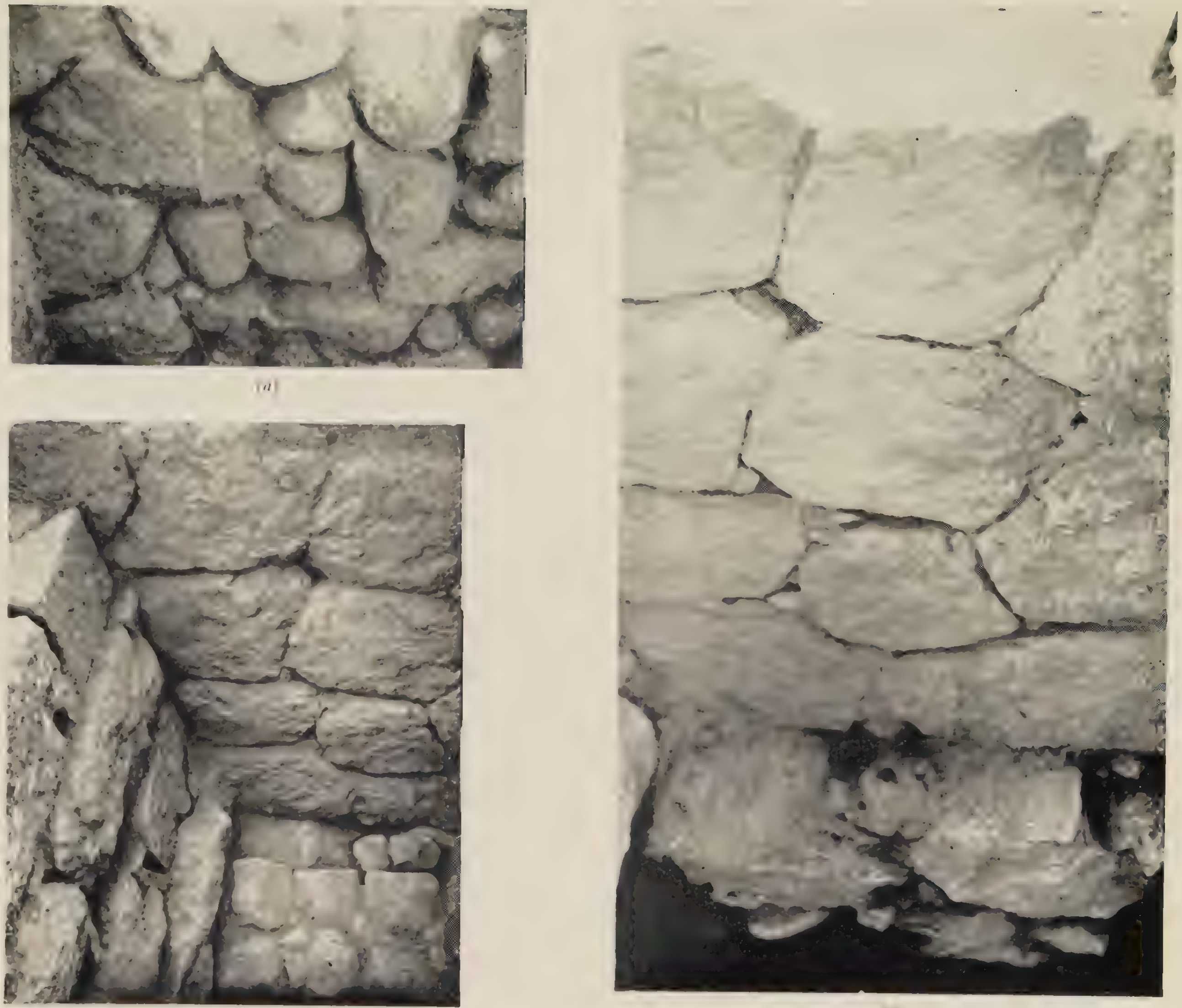

METRES:
8
7
6
5
4
3
2
1
SEA-LEVEL
4TH CENTURY DEBRIS
DEBRIS OF LATE BRONZE AGE WALL?
WALL 1
WALL 3
WALL 2
WALL 4
R.V. NICHOLLS, 1949-50.

OLD SMYRNA. THE FORTIFICATIONS, SECTION κ–κ′


S
PIT
7TH CENTURY LEVELS
6TH CENTURY STRATA
MIDDLE GEOMETRIC PITS
LATE GEOMETRIC HOUSE
7TH CENTURY LEVELS
WALL 2/3 FACE
"WORKING TRENCH"
CLA
METRES ABOVE SEA-LEVEL:
14
13
12
11
10
9
8
7
6
5
4
MODERN TERRACE
WALL 2/3 BRICK
WALL I DEBRIS
WALL I BRICK
ETRIC LEVELS
MIDDLE GEOMETRIC
LATE GEOMETRIC
MONOCHROME OCCUPATION
DEBRIS OF LATE BRONZE AGE FORTIFICATION?
PROTOGEOMETRIC PITS
EARLY GEOMETRIC
PROTOGEOMETRIC
WALL I FILL

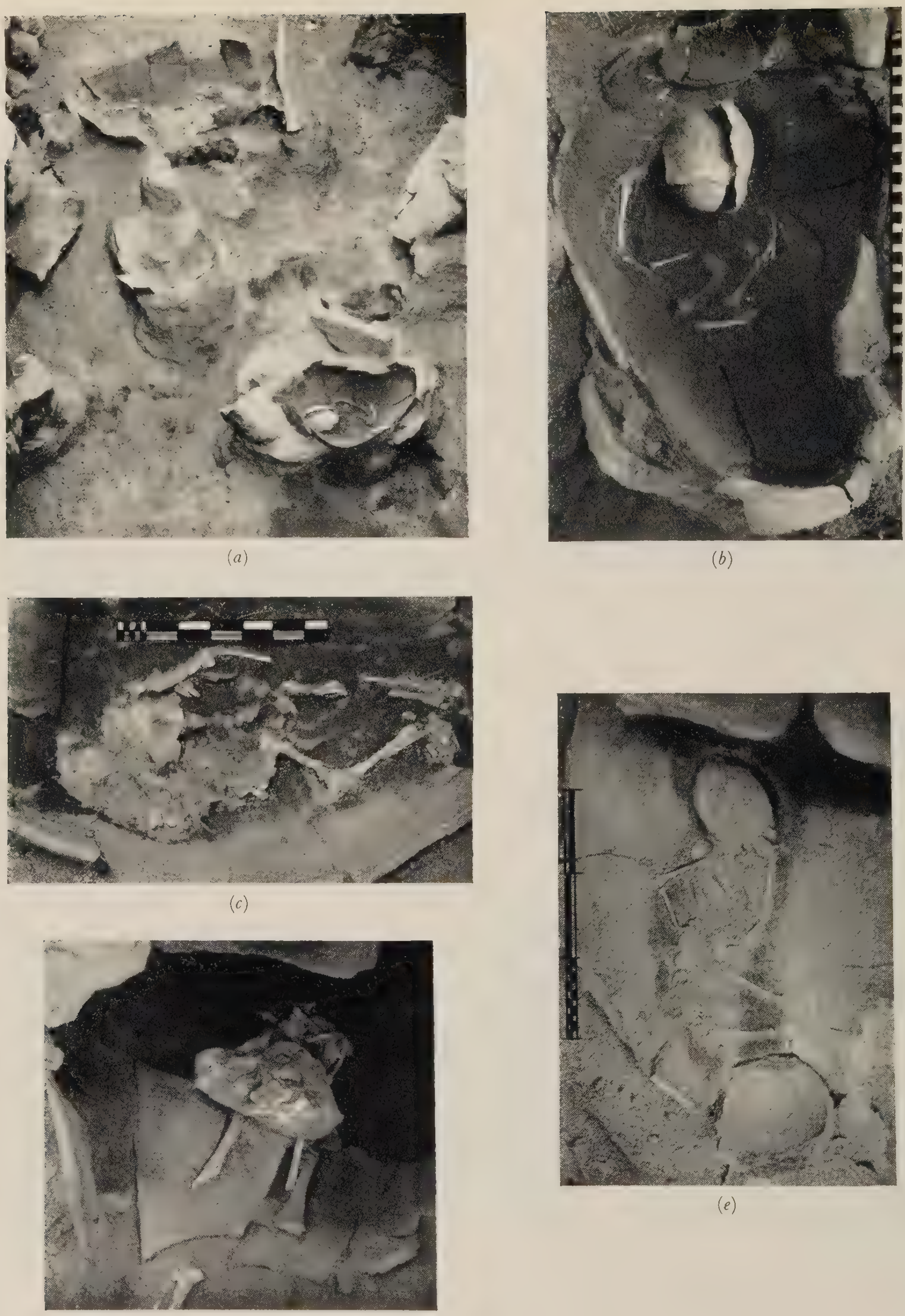
OLD SMYRNA: THE FORTIFICATIONS

HABITATION LEVELS AGAINST THE FORTIFICATIONS, SECTION η–η′



OLD SMYRNA

FORTIFICATIONS, SECTION λ–λ′. (a) REBUILT WALL 1 OUTER FACE (p. 40). (b), (c) WALL 2 INNER FACE FOUNDATION (pp. 41–3).



(*a*)

(*b*)

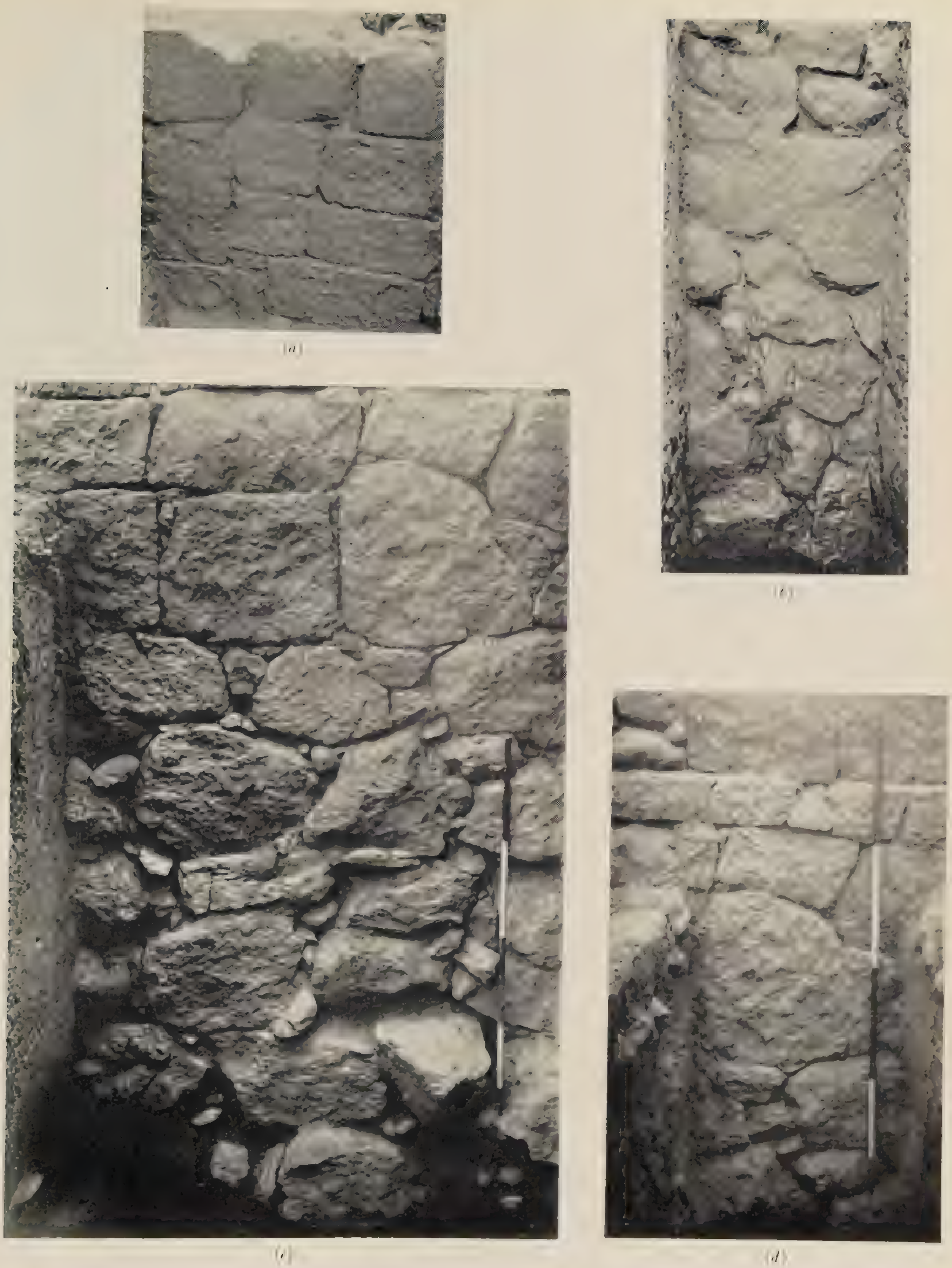
(*c*)

(*d*)

(*e*)

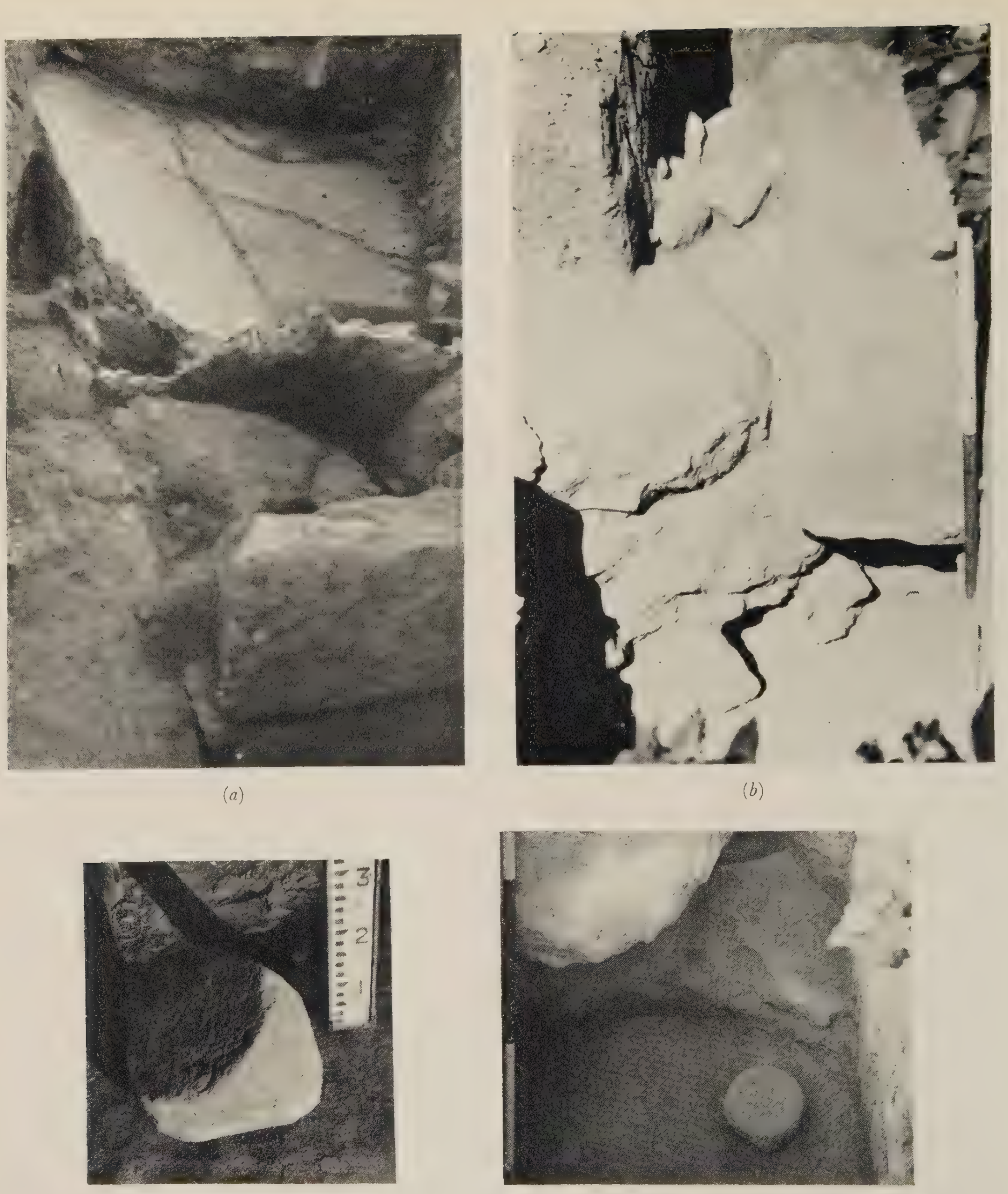
OLD SMYRNA

FORTIFICATIONS, Section λ–λ′, ‘Children’s Cemetery’. (*a*) Some of the burials in Area ‘A’ opened (p. 44). (*b–e*) Burial positions: (*b*) Burial *c*, (*c*) Burial *f*, (*d*) Burial *g*, (*e*) Burial *j*.



OLD SMYRNA

FORTIFICATIONS, SECTION λ–λʹ. (*a–b*) LATE SEVENTH-CENTURY WALL AND REVETMENT (pp. 46 ff.).
(*c–d*) WALL 3 OUTER FACE FOUNDATION (p. 48).

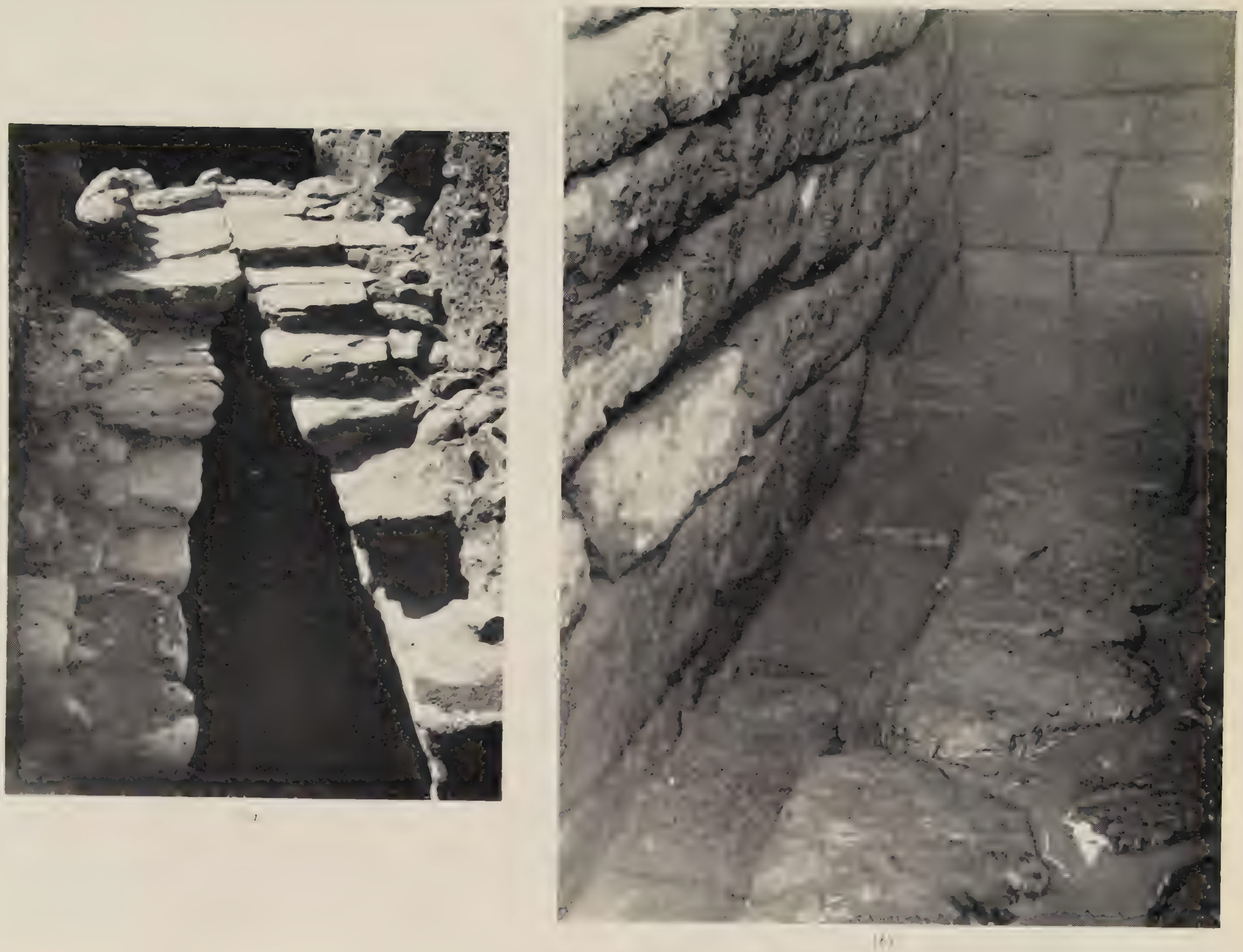


(*a*) (*b*)

(*c*) (*d*)

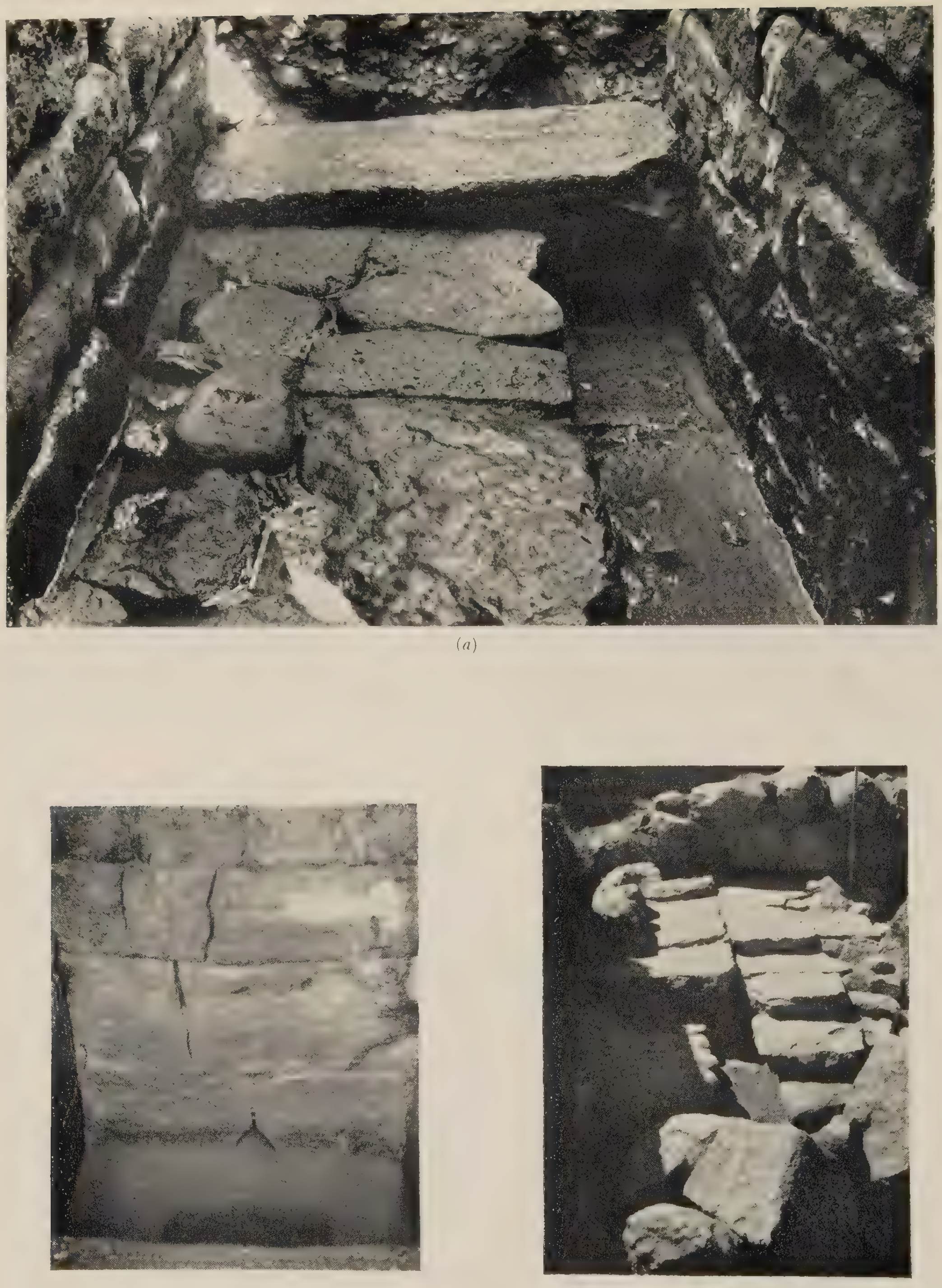
OLD SMYRNA

FORTIFICATIONS. (*a*) CEMENT-LINED BASIN AGAINST INNER FACE OF WALL (p. 52). (*b*) APPARENTLY RE-USED LINTEL-BLOCK (p. 52). (*c–d*) COLUMN BASE IN SEVENTH-CENTURY HOUSE BY SECTION μ–μ' (p. 55).



OLD SMYRNA

FOUNTAIN-HOUSE (pp. 58 f.). (a) VAULT FROM EAST. (b) PASSAGE AND OVERFLOW CHANNEL, DRAW-BASIN TO REAR.

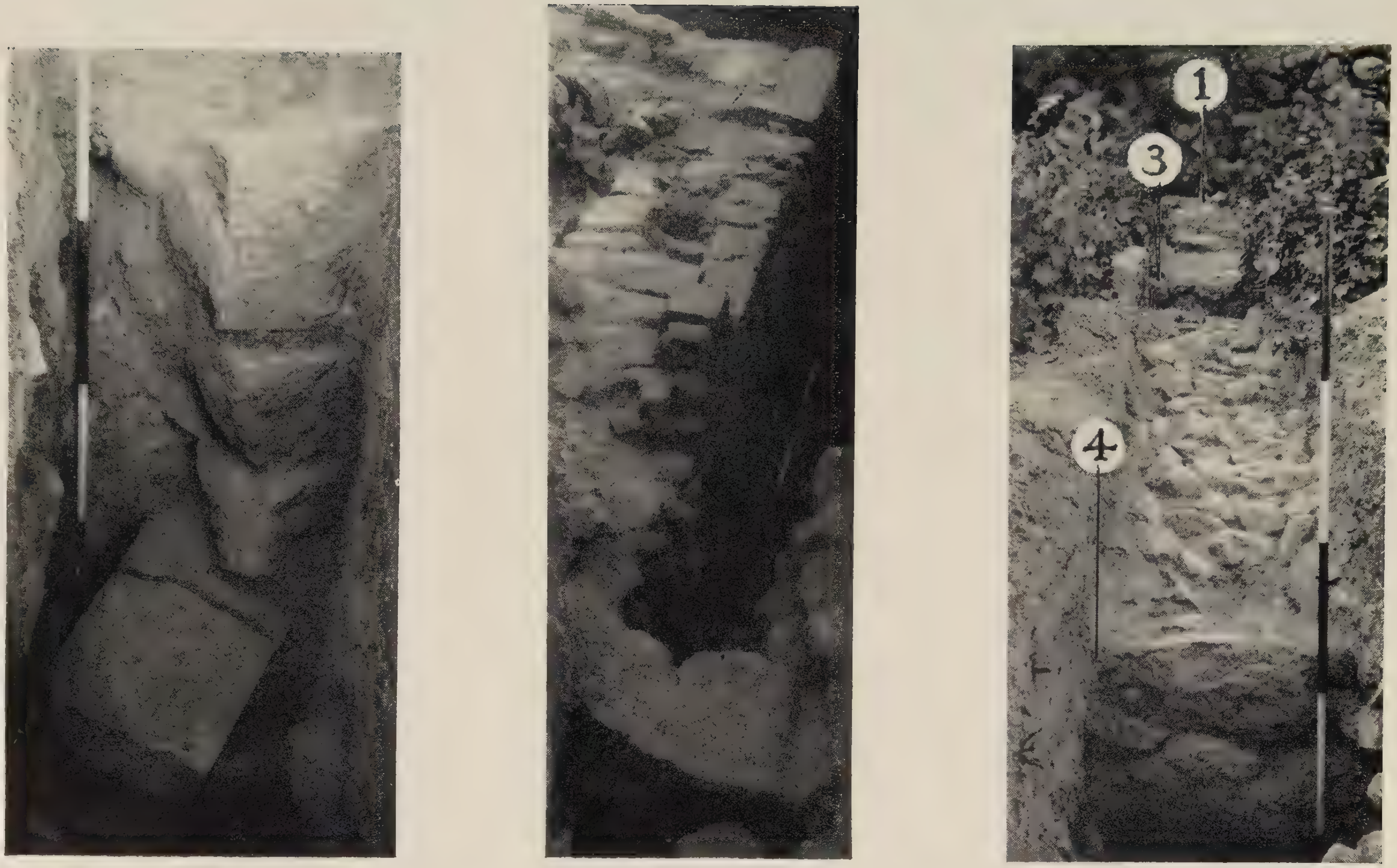


(*a*)

(*b*) (*c*)

OLD SMYRNA

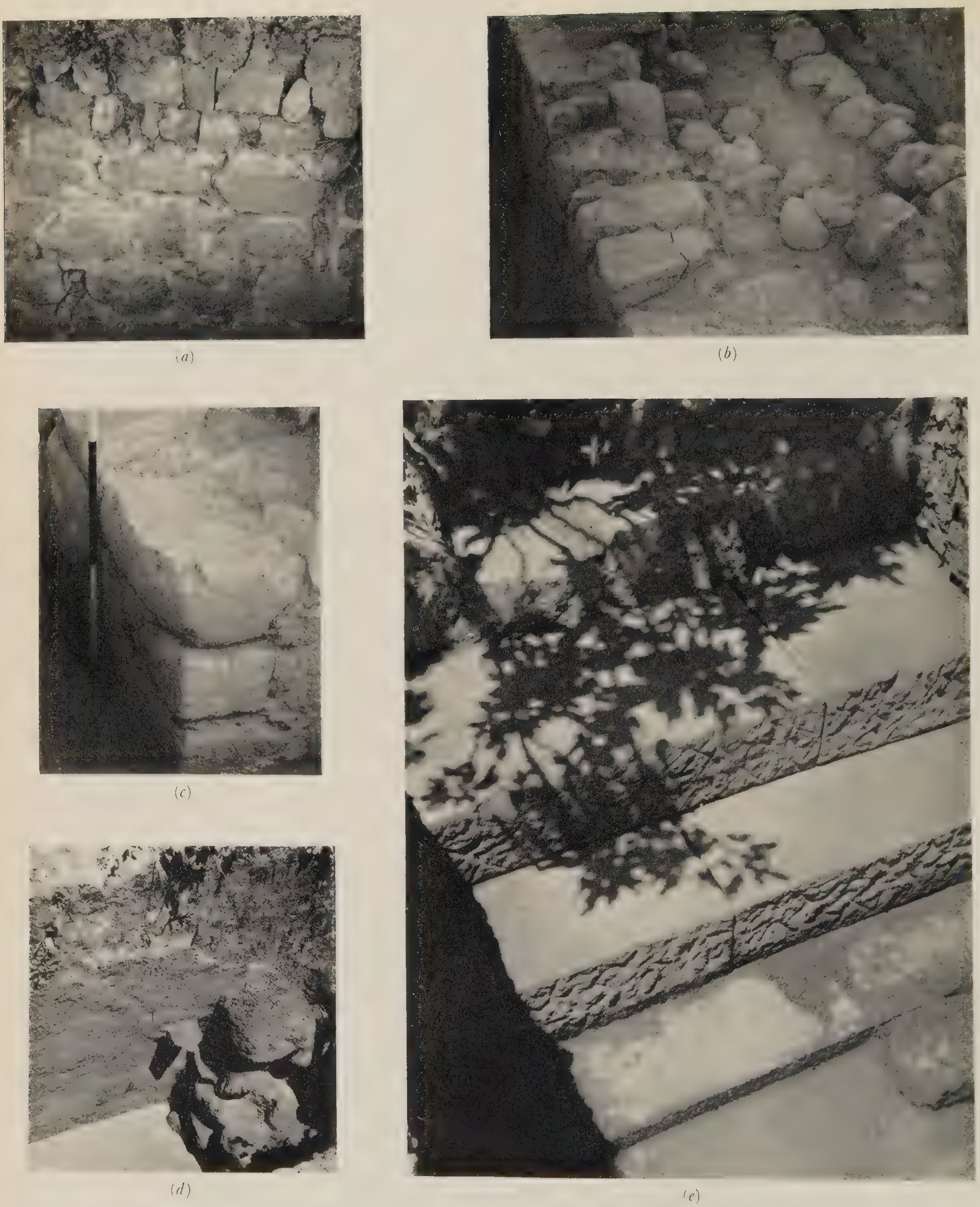
FOUNTAIN-HOUSE (pp. 58 f.). (*a*) PASSAGE, OVERFLOW CHANNEL, AND THRESHOLD BLOCK. (*b*) INLET TO DRAW-BASIN. (*c*) FALLEN FACE-BLOCKS OUTSIDE THE FOUNTAIN-HOUSE (p. 64).



(*a*) (*b*) (*c*)

OLD SMYRNA

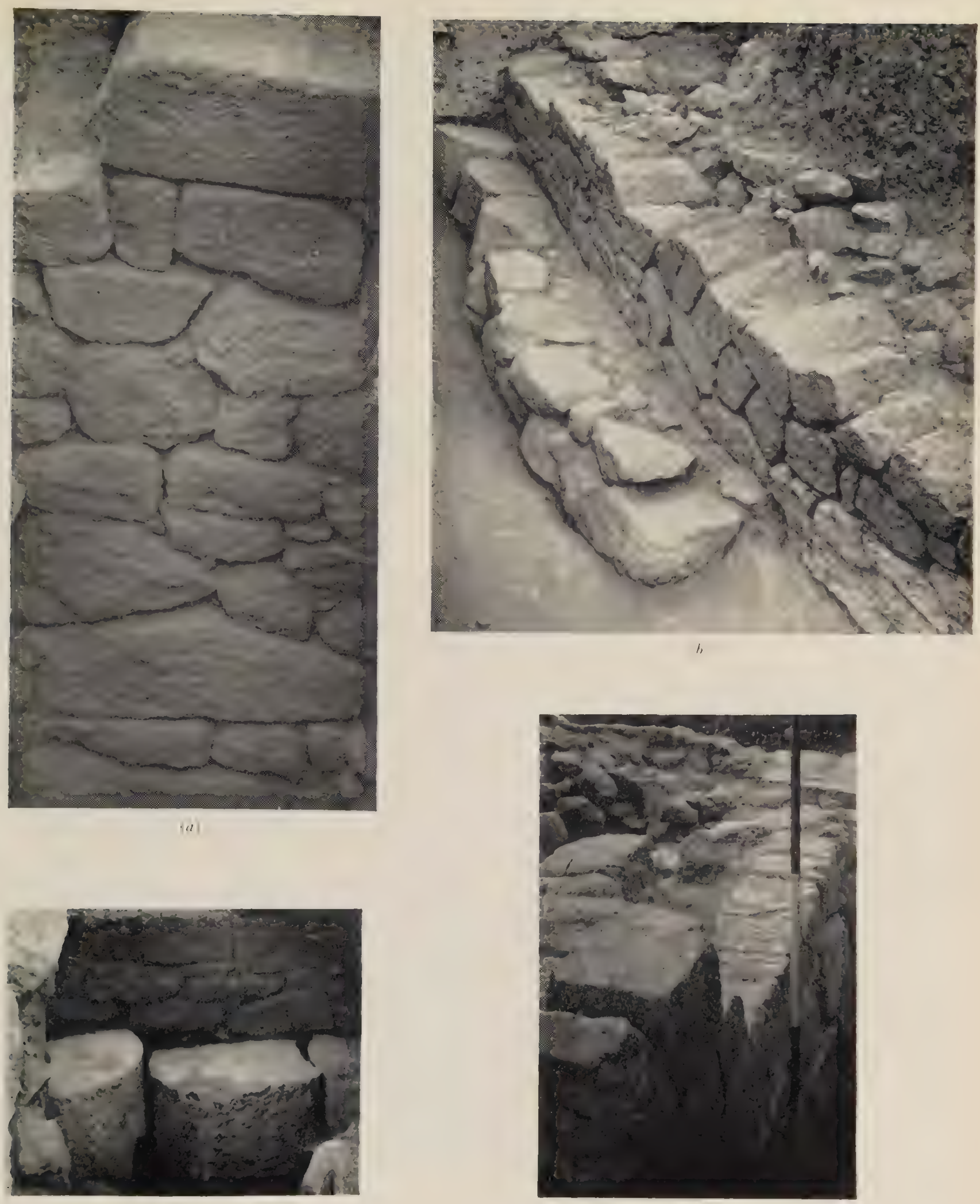
FORTIFICATIONS. (*a*) APPARENT JUNCTION IN WALL-FACE (pp. 66–8). (*b–c*) THE NORTH-EAST GATE (p. 68): (*b*) EAST FACE OF WALL I TOWER FROM SOUTH. (*c*) AN EARLY STAGE IN THE CUTTING OF SECTION κ–κ' FROM THE NORTH, SHOWING THE FACES OF THE WALL I, 3, AND 4 TOWERS.



(*a*) (*b*) (*c*) (*d*) (*e*)

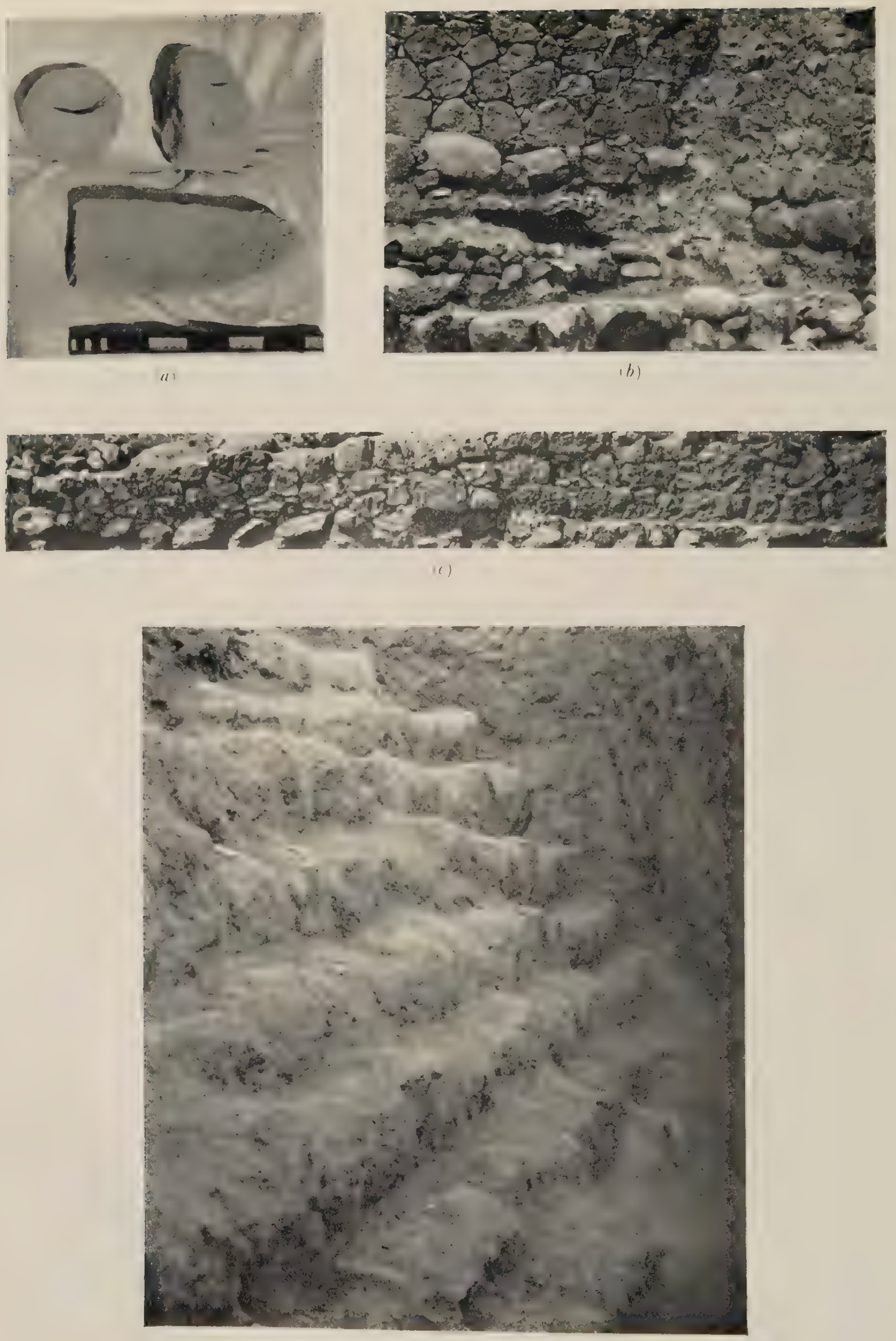
OLD SMYRNA

FORTIFICATIONS, North-east gate. (*a–c*) Wall 1 tower (pp. 68–71). (*d*) Brick behind Wall 3 tower face in Section κ κ′ (p. 72). (*e*) Steps outside Wall 4 (p. 74).



OLD SMYRNA

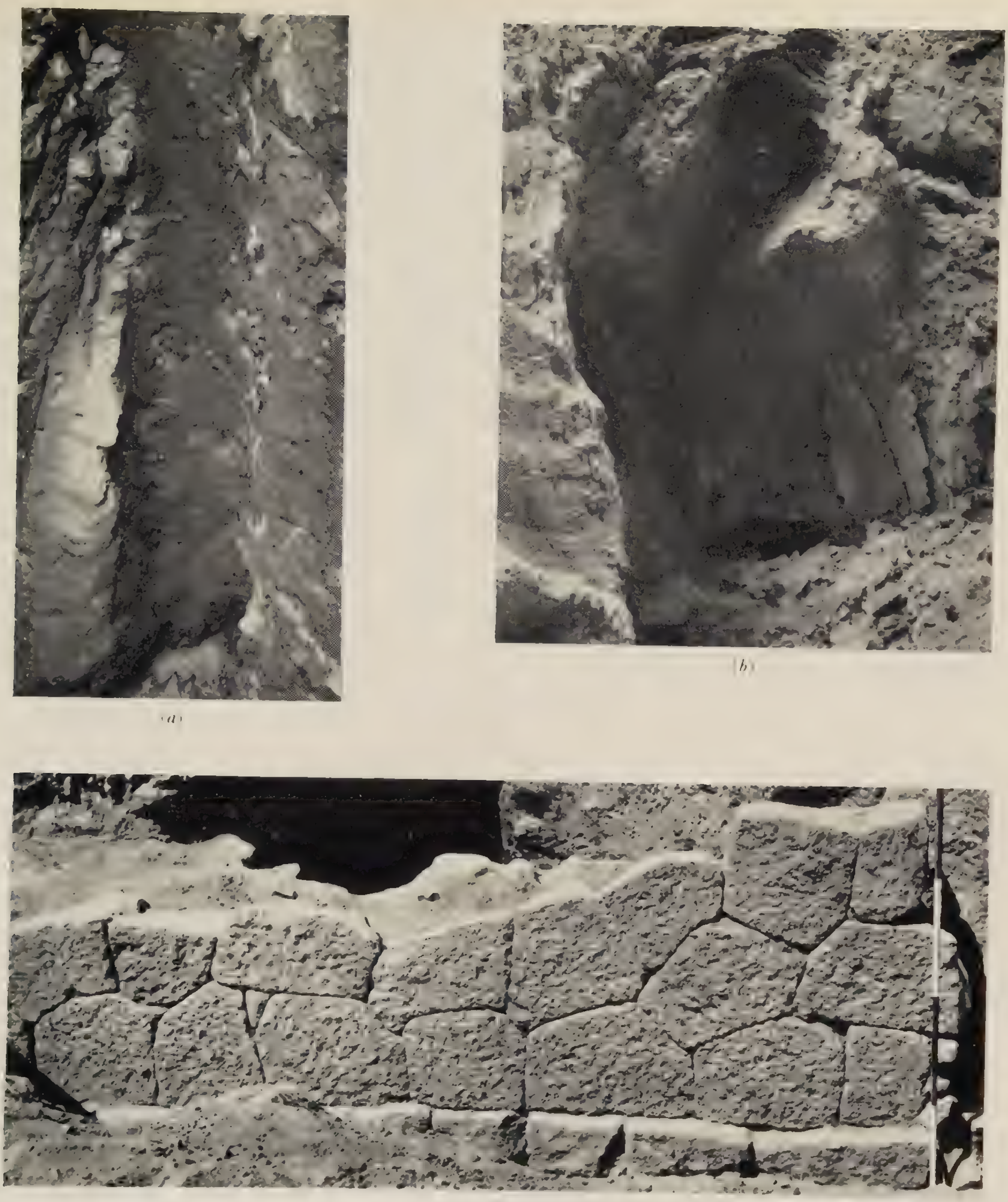
FORTIFICATIONS. (*a*) Wall 3/4 face in Section θ–θ' (p. 81). (*b*) and (*c*) Classical terrace to north of temple (p. 81). (*d*) Wall 1 tower at north-east gate (pp. 68–71).



(a) (b) (c) (d)

OLD SMYRNA

FORTIFICATIONS, Section η–η'. (a) Worked stones from Wall 1 fill (p. 84). (b) Wall 2/3 inner face and anterior and subsequent house-walls at north-west corner of main occupation probe (pp. 84–7). (c) Central stretch of Wall 2/3 inner face to north of main occupation probe (p. 86). (d) Classical glacis (p. 87).

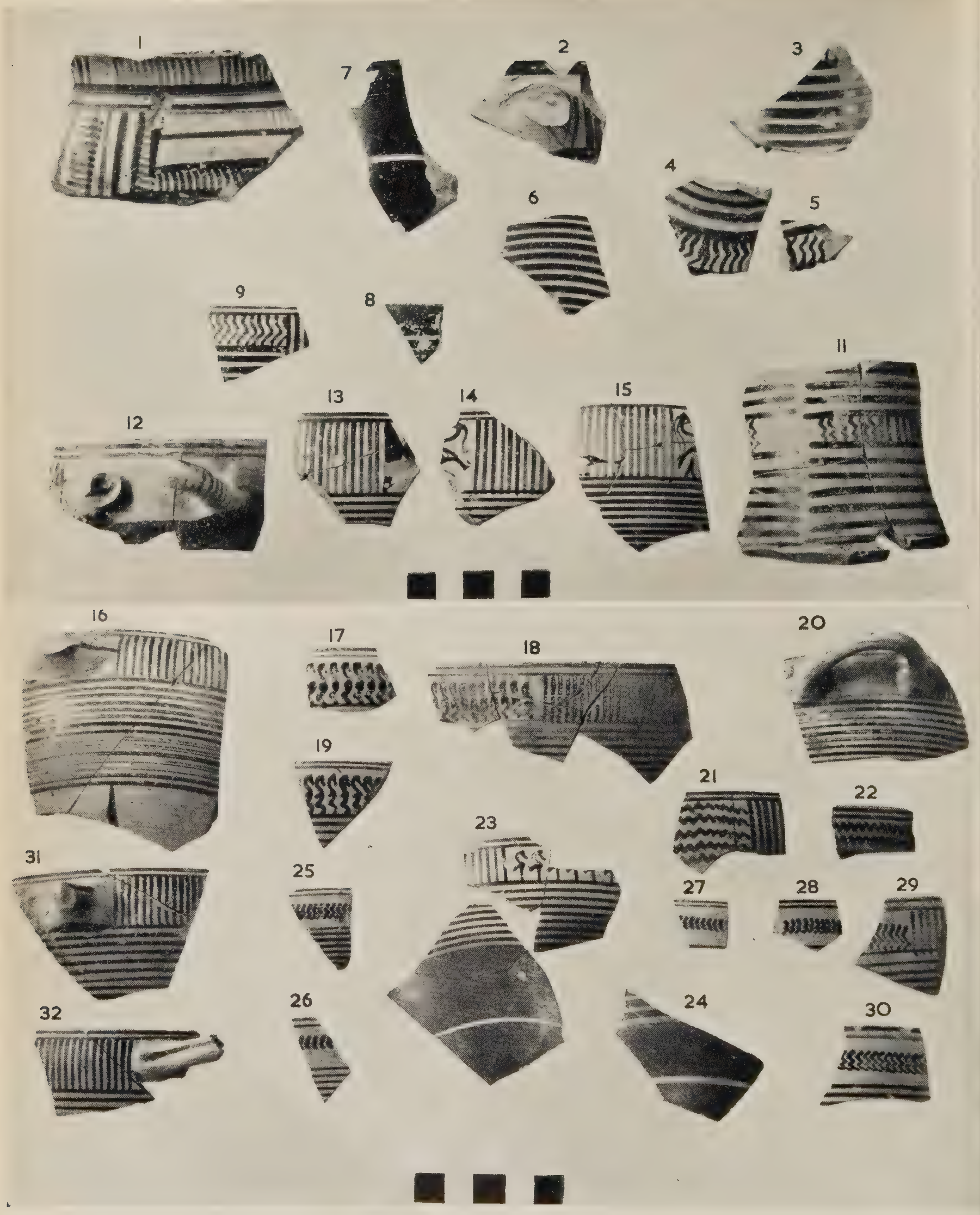


(a) (b)

(c)

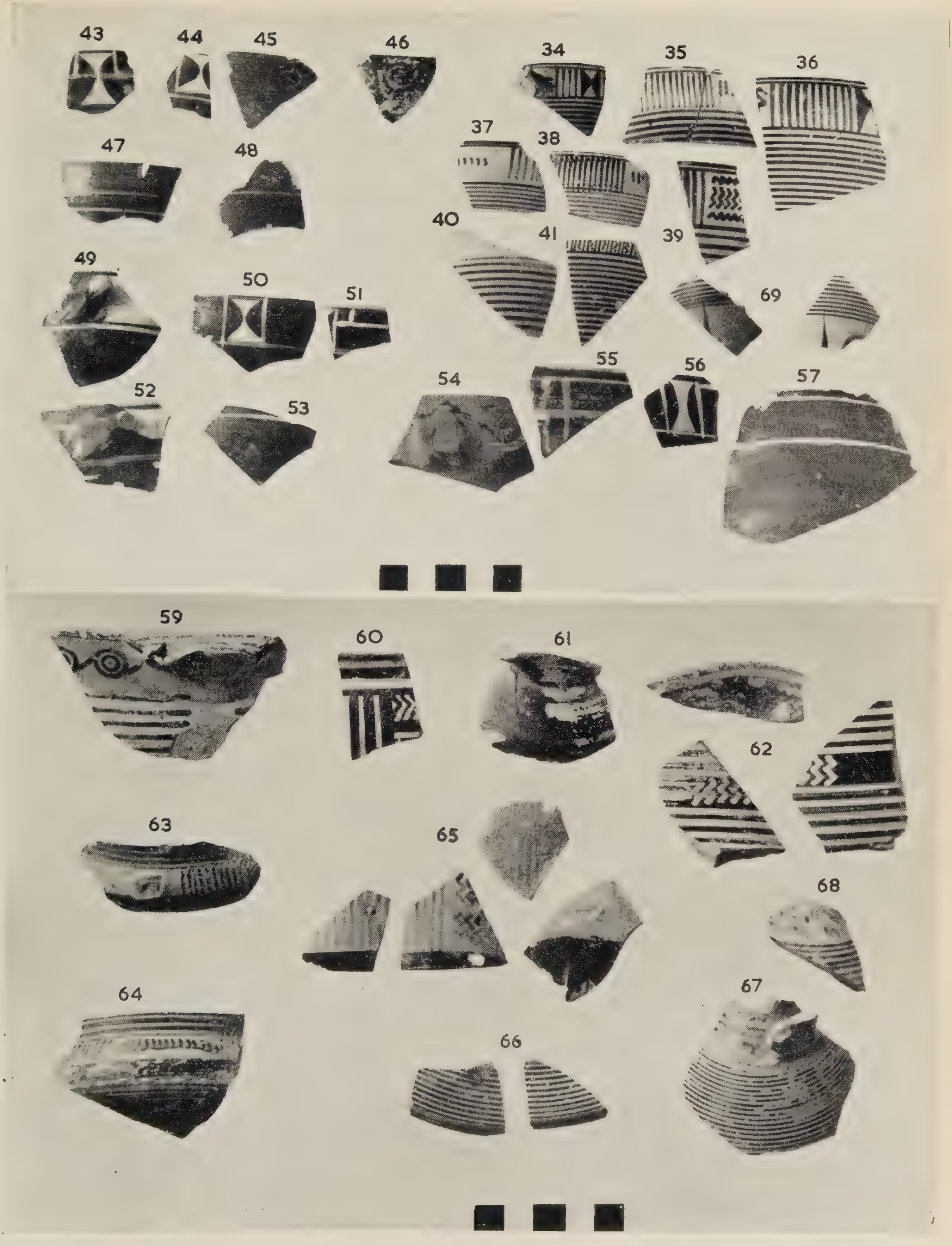
OLD SMYRNA

FORTIFICATIONS. (*a–b*) WOOD IMPRESSIONS IN MOUND-FILL (p. 89). (*c*) LESBIAN WALL TO WEST OF CITY (p. 93).


1
2
3
7
4
6
5
9
8
11
12
13
14
15
16
17
18
20
19
21
22
23
31
25
27
28
29
32
26
24
30

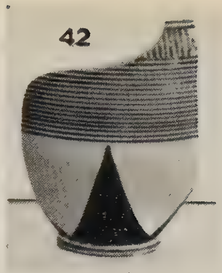
OLD SMYRNA

THE CORINTHIAN POTTERY.


43
44
45
46
34
35
36
37
38
47
48
40
41
39
49
50
51
69
52
53
54
55
56
57
59
60
61
62
63
65
68
64
66
67

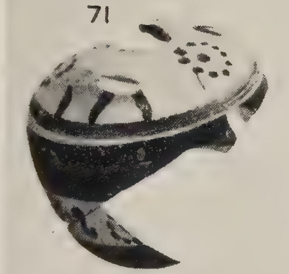
OLD SMYRNA

THE CORINTHIAN POTTERY.



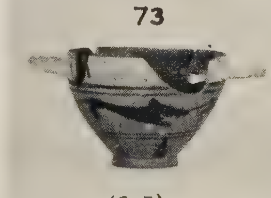
42

(2:5)



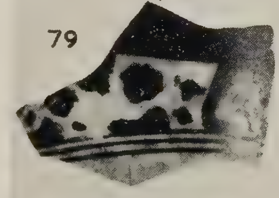
71

(1:2)



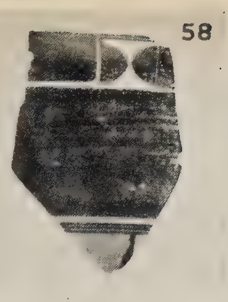
73

(2:5)

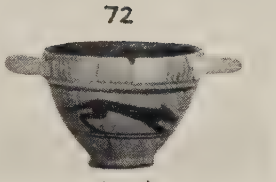


79

(3:5)

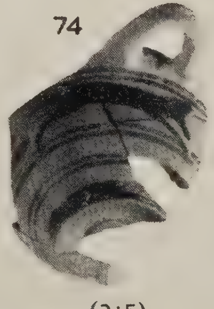


58



72

(2:5)

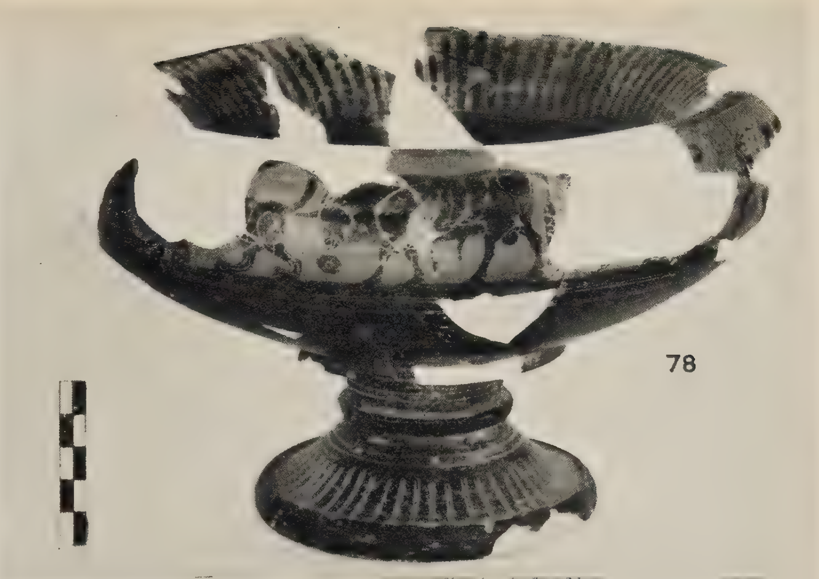


74

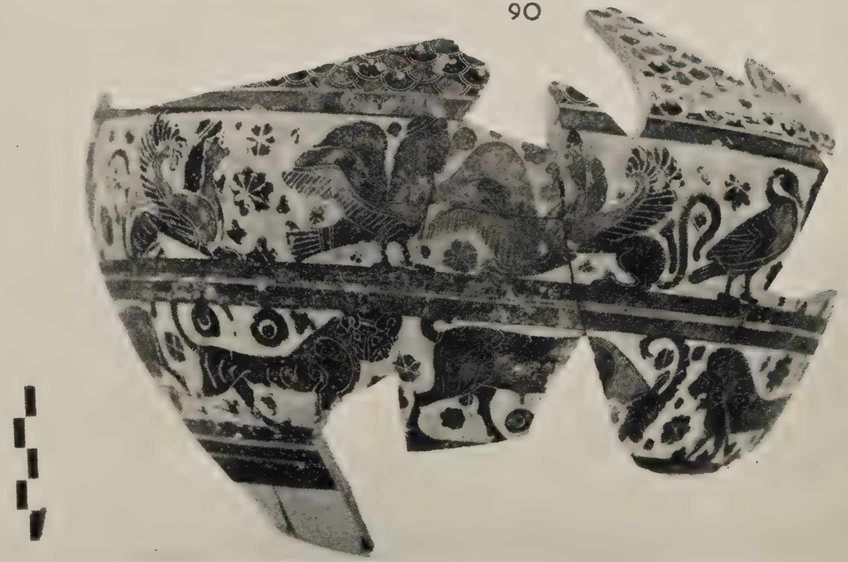
(3:5)

80

(1:4)



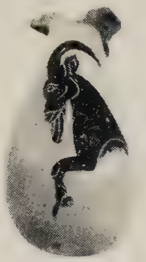
78



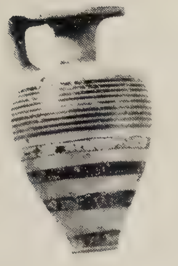
90

OLD SMYRNA
THE CORINTHIAN POTTERY.

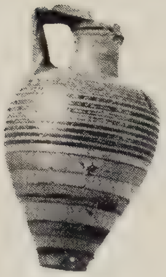
86



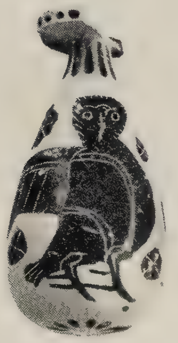
75



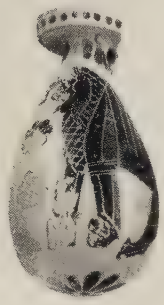
76



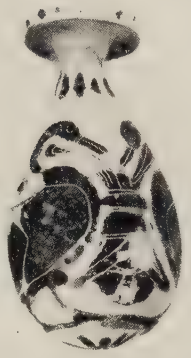
81



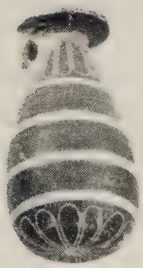
87



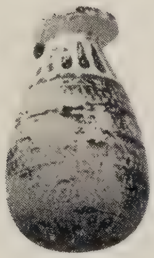
82



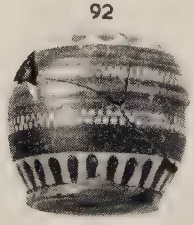
88



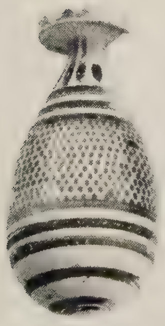
89



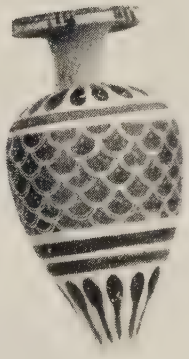
92



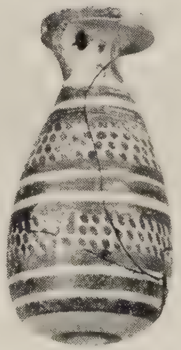
83



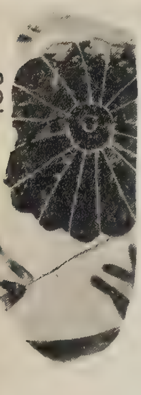
84

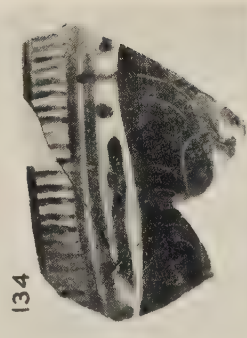


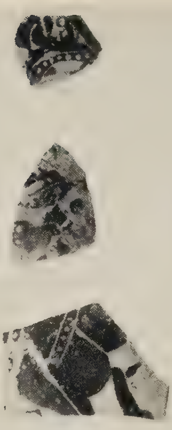
91

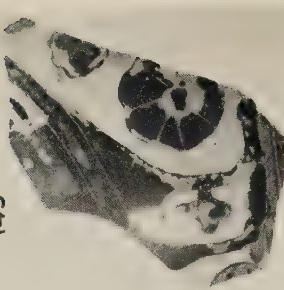


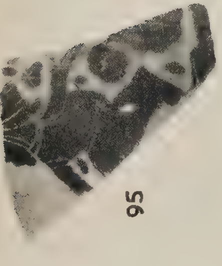
OLD SMYRNA
The Corinthian Pottery.

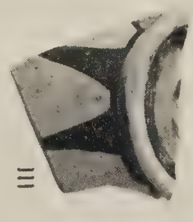

108 (1:2)

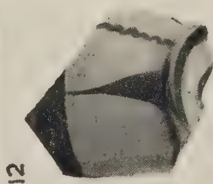

134 (3:5)

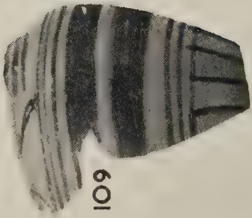

144 (3:5)

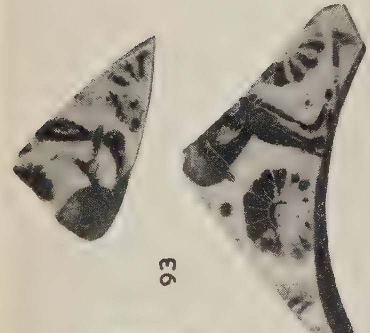

145 (3:5)

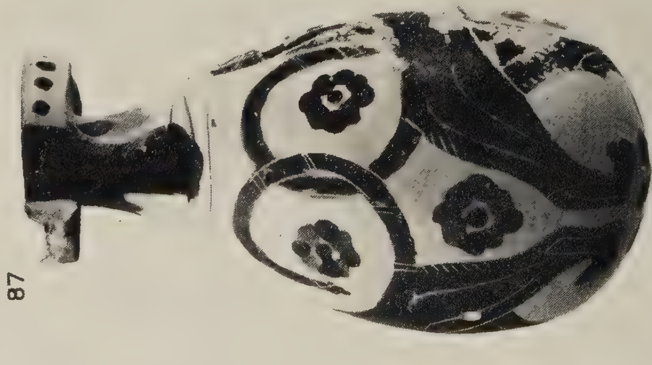

95 (3:5)

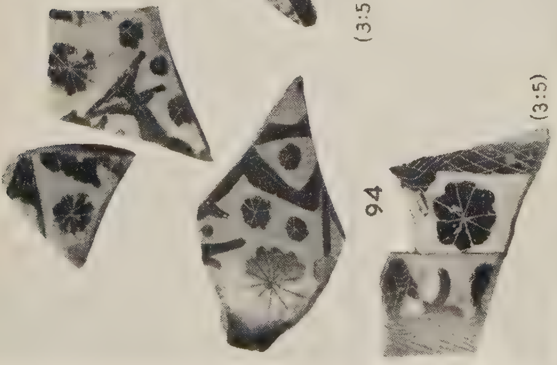

111

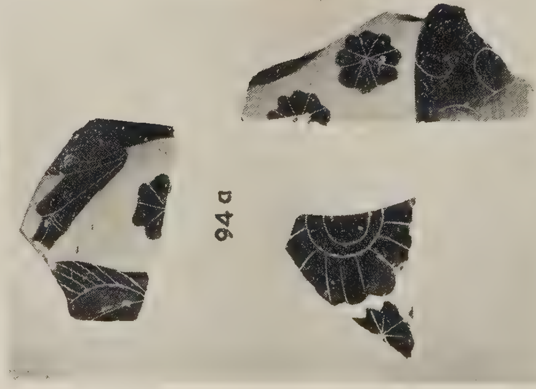

112 (3:5)


109 (1:2)

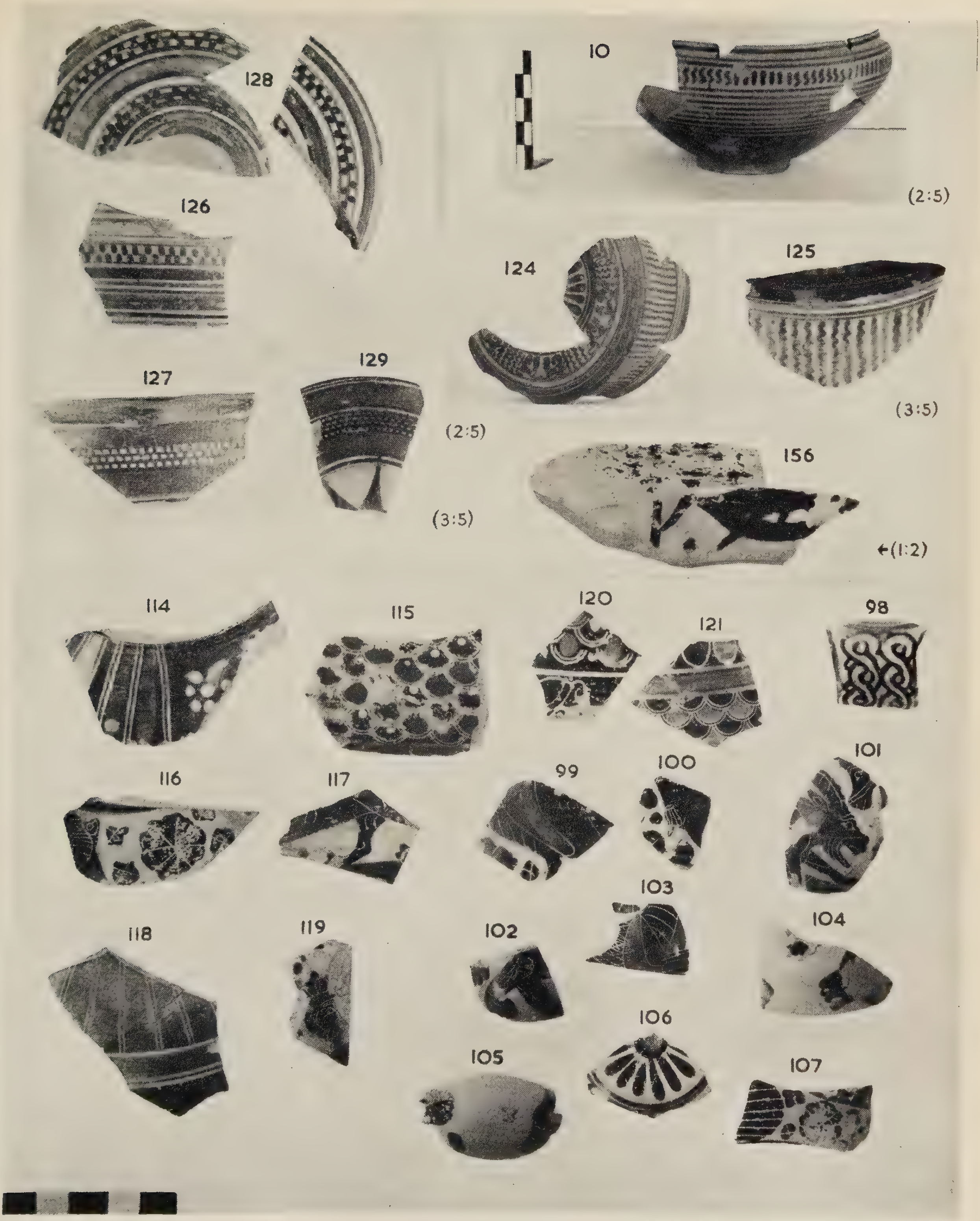

93 (3:5)


87 (1:1)

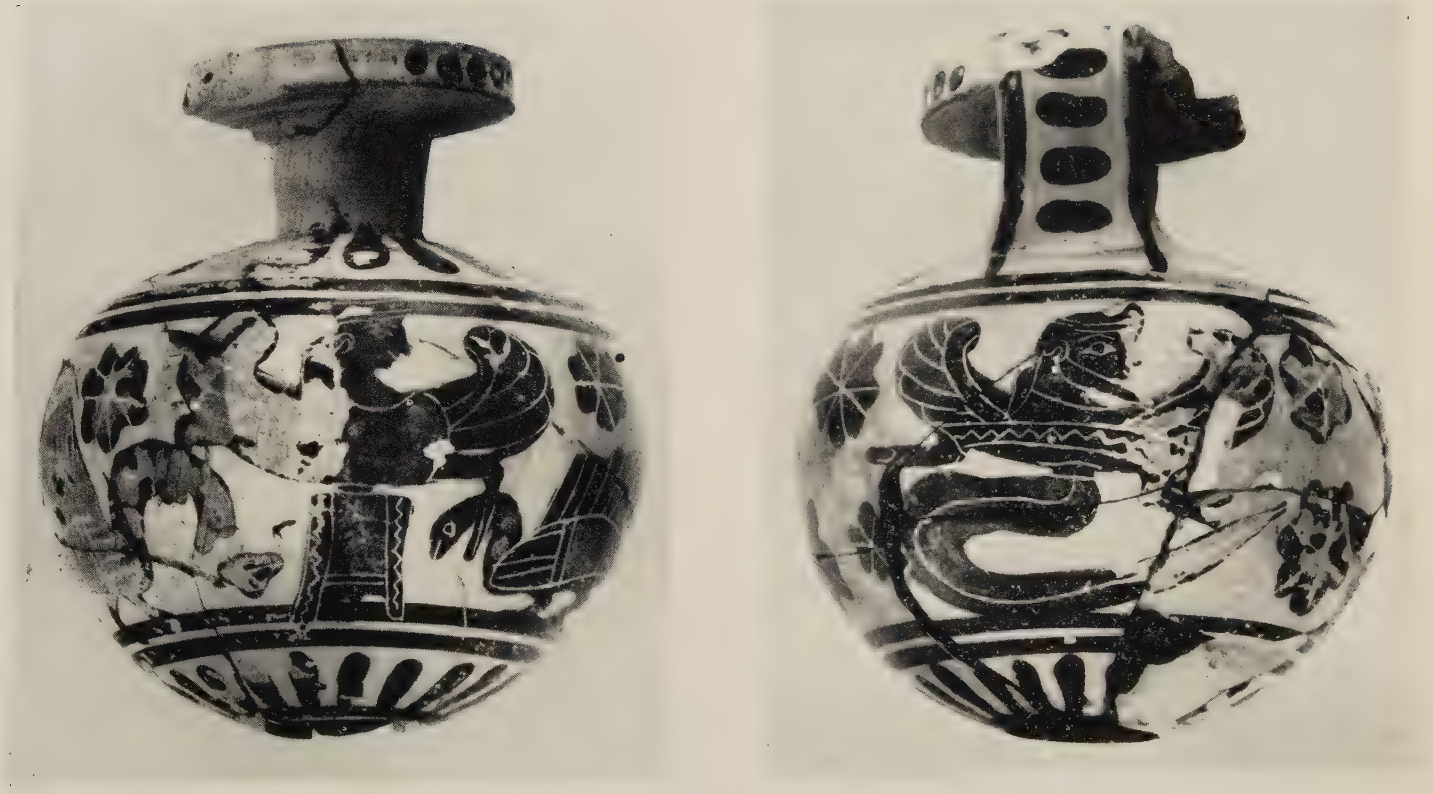

94 (3:5)


94 a (1:2)

OLD SMYRNA
THE CORINTHIAN POTTERY.

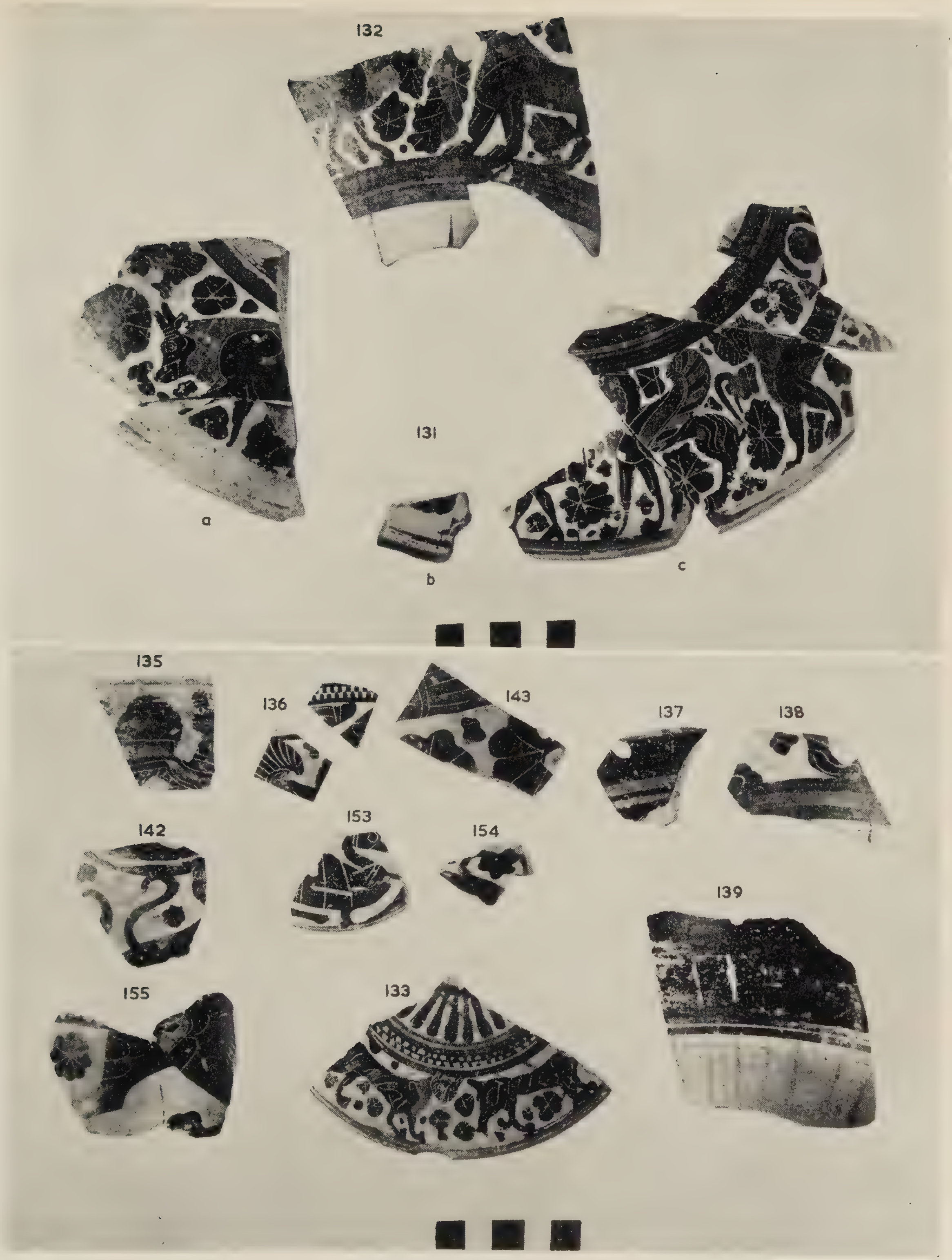

128
10
(2:5)
126
124
125
127
129
(2:5)
(3:5)
(3:5)
156
←(1:2)
114
115
120
121
98
116
117
99
100
101
118
119
102
103
104
106
105
107

OLD SMYRNA
THE CORINTHIAN POTTERY.



OLD SMYRNA

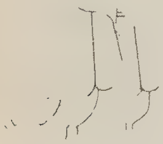
THE CORINTHIAN POTTERY: No. **130** (3:2).


132
131
a
b
c
135
136
143
137
138
142
153
154
139
155
133

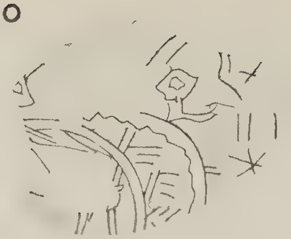
OLD SMYRNA

THE CORINTHIAN POTTERY.

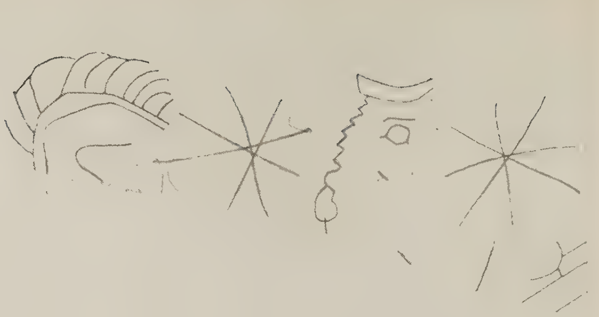
70



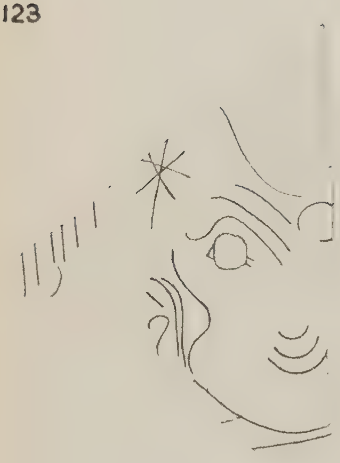
110



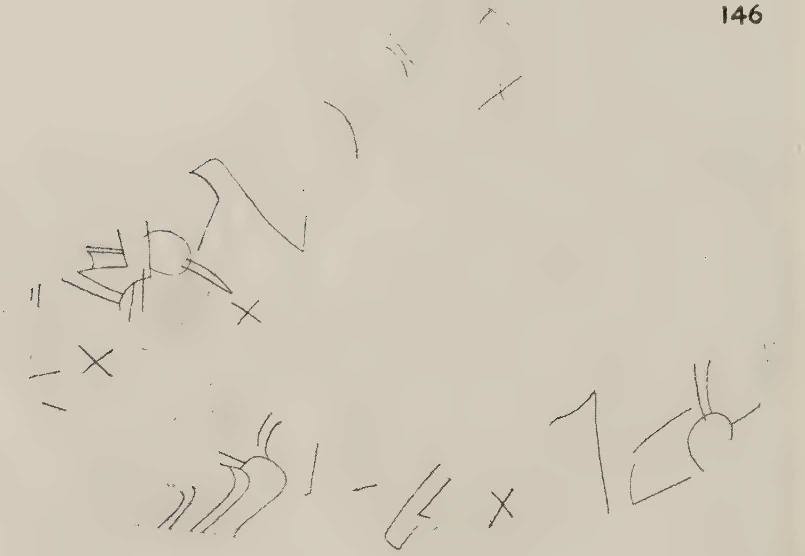
122



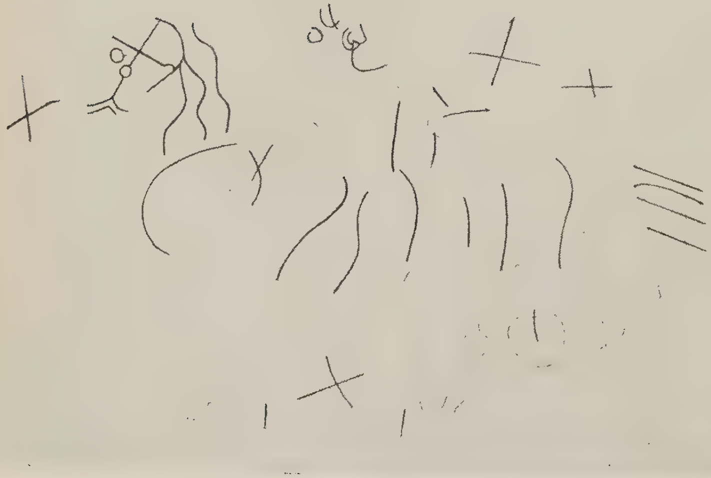
123



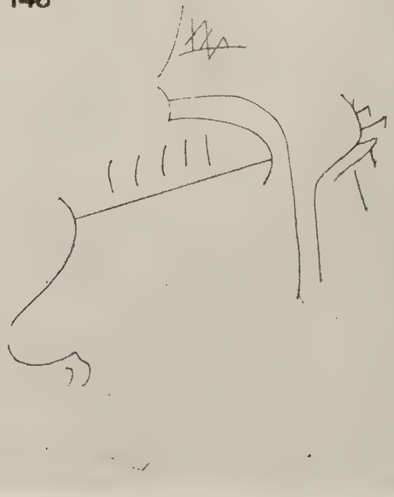
146



147

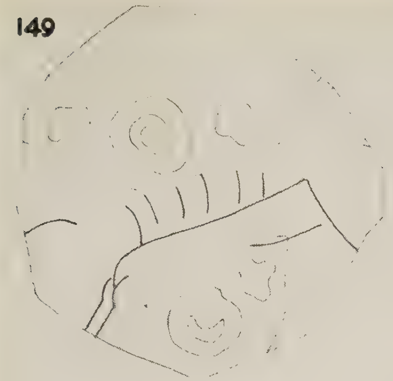


148

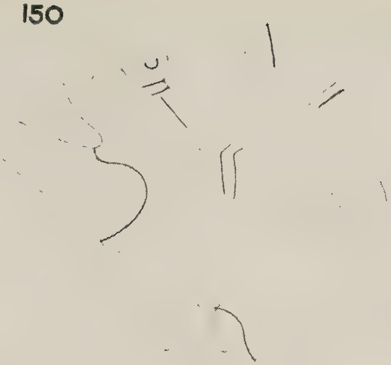


OLD SMYRNA
THE CORINTHIAN POTTERY.

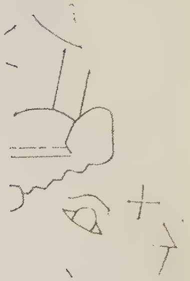
149



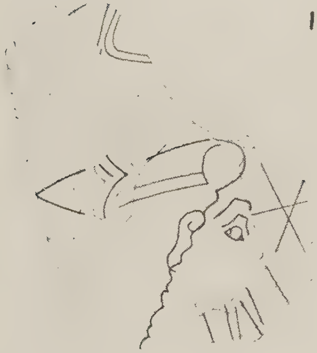
150



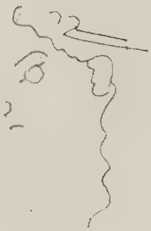
152

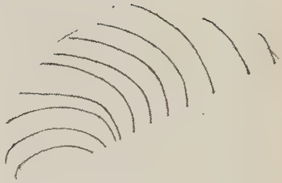


151

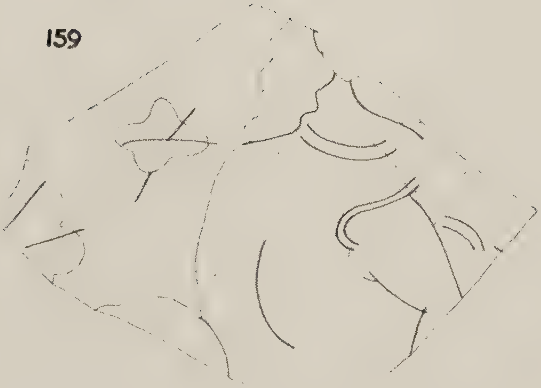


157

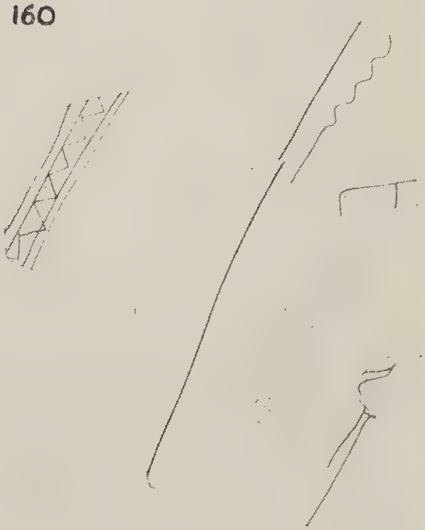




159

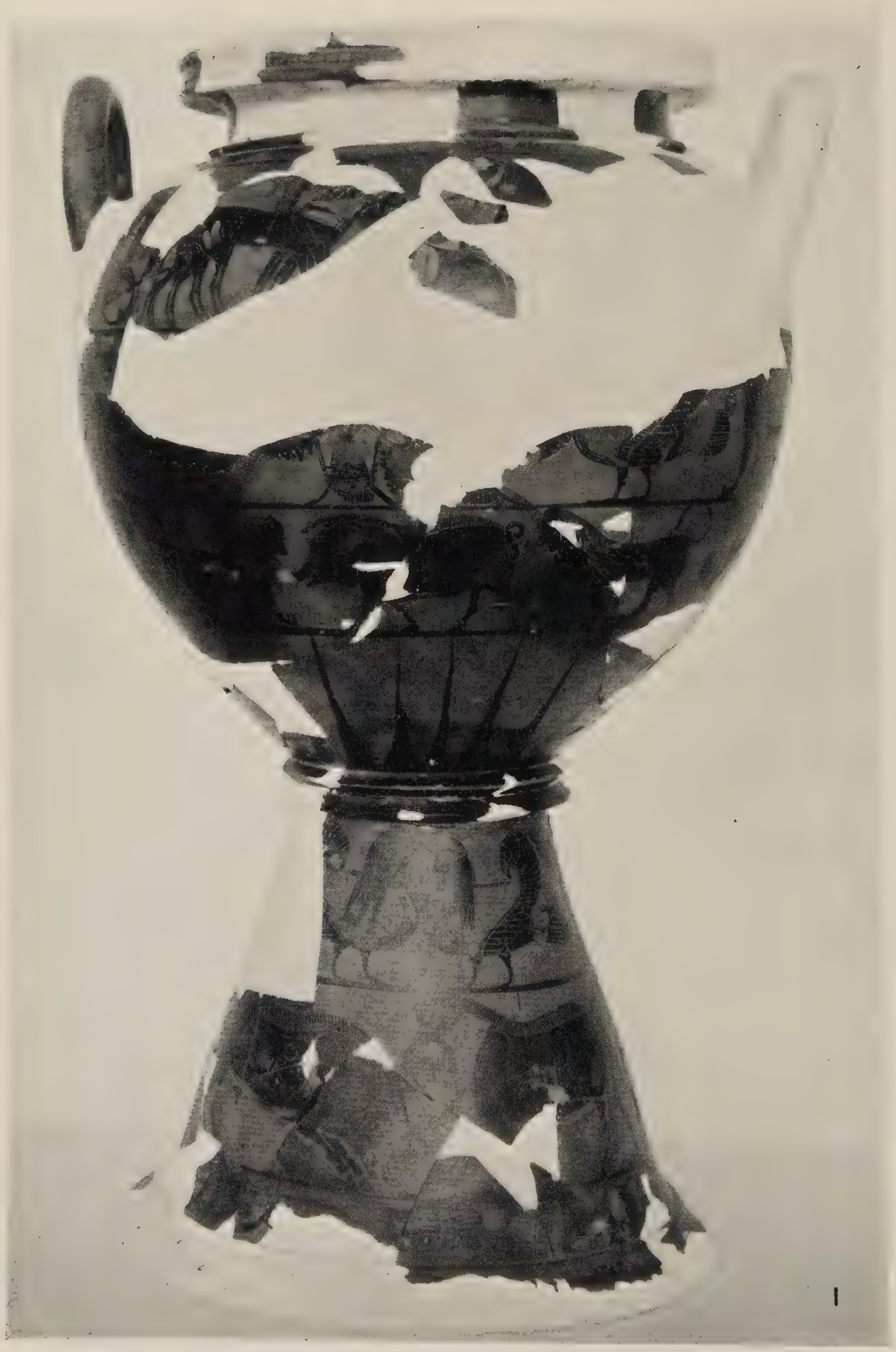


160

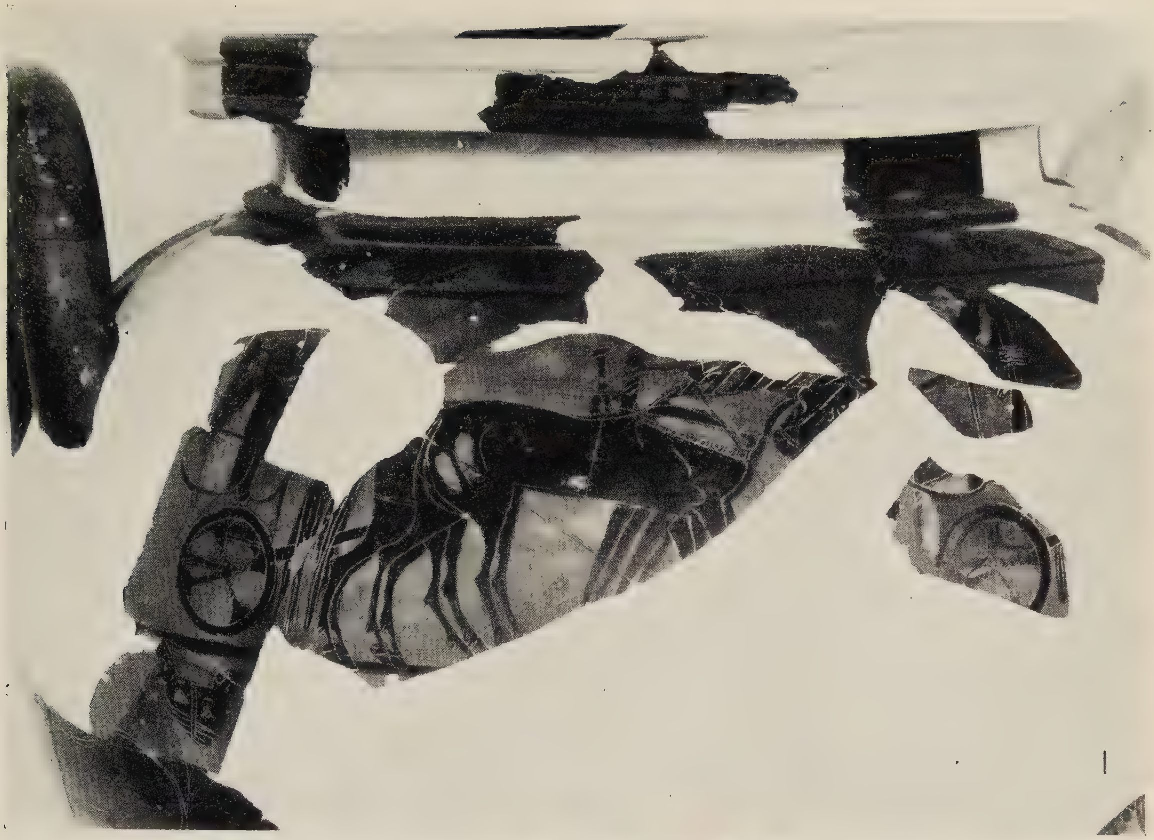


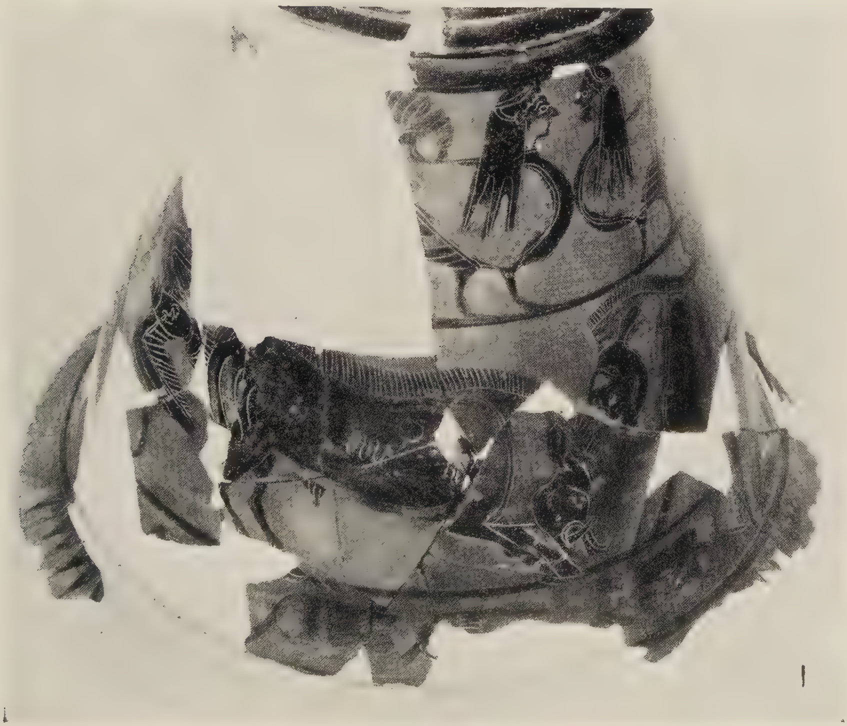
OLD SMYRNA

THE CORINTHIAN POTTERY.

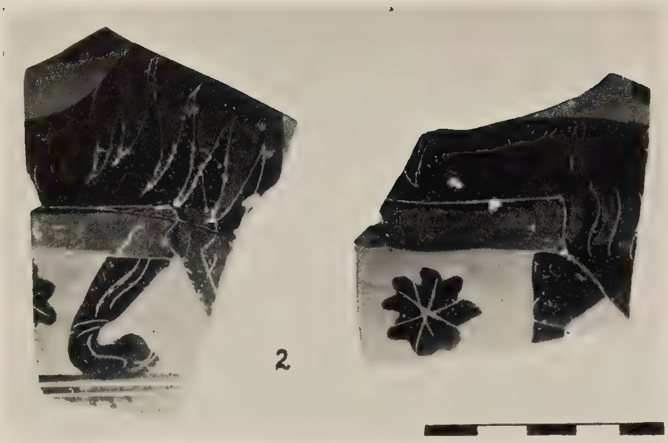


OLD SMYRNA
THE ATTIC POTTERY.

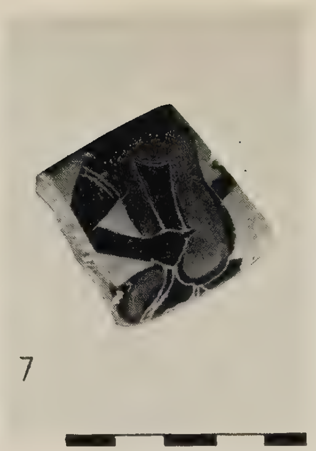




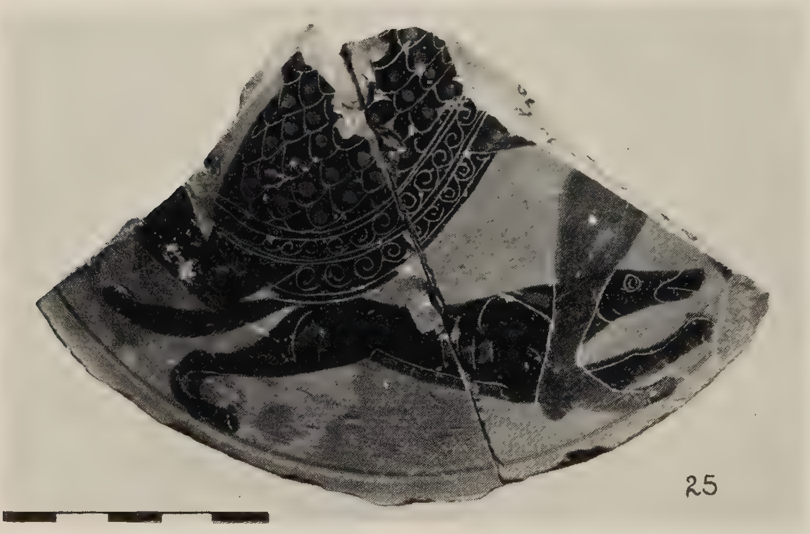
OLD SMYRNA
THE ATTIC POTTERY.



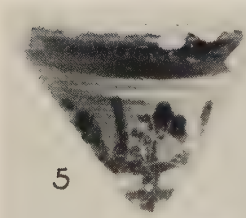
2



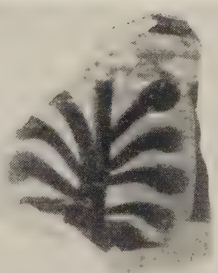
7



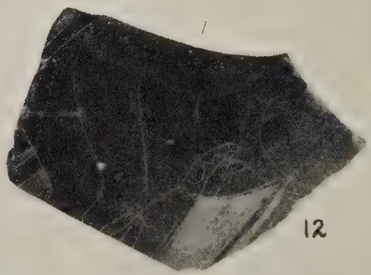
25



5



6

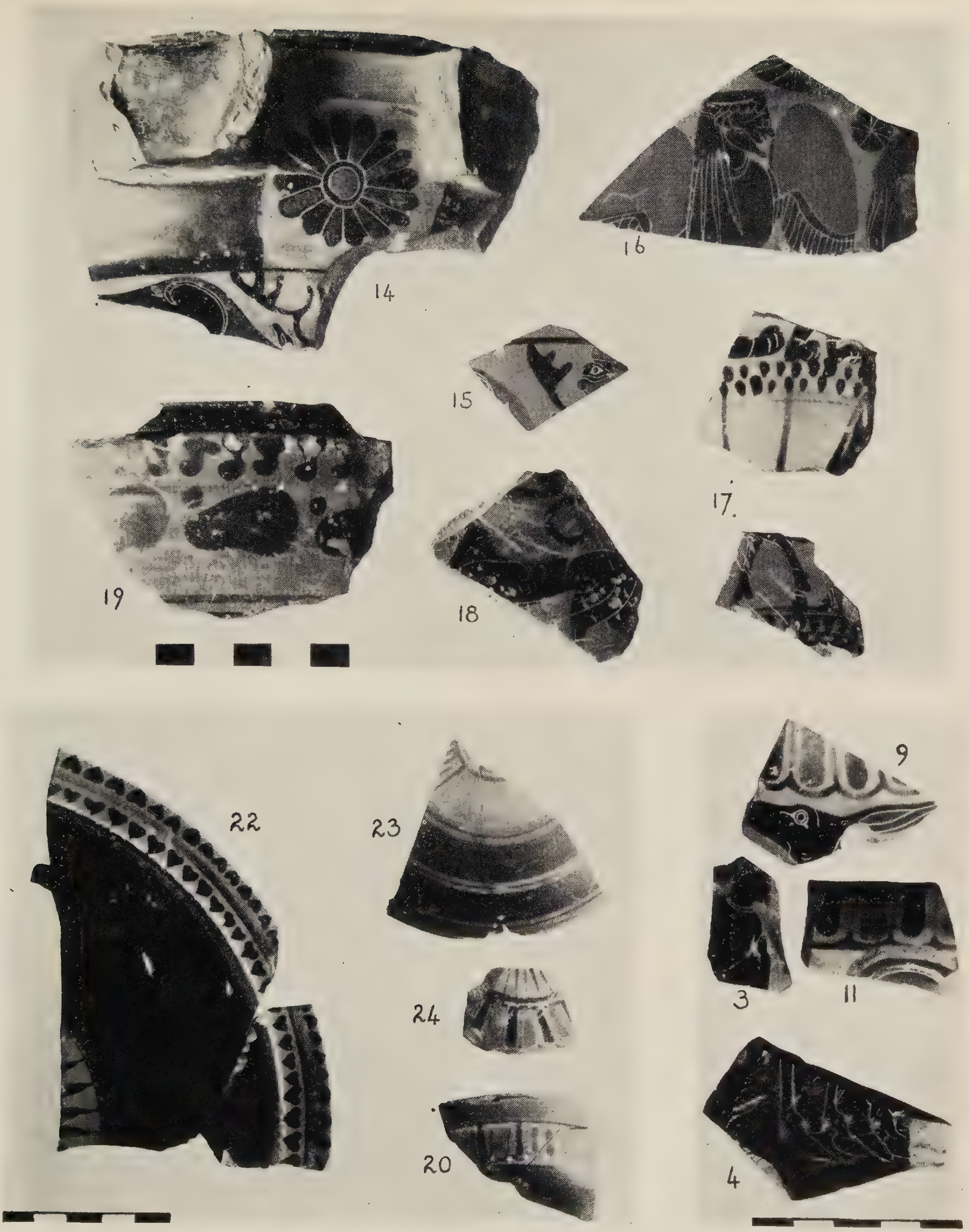


12

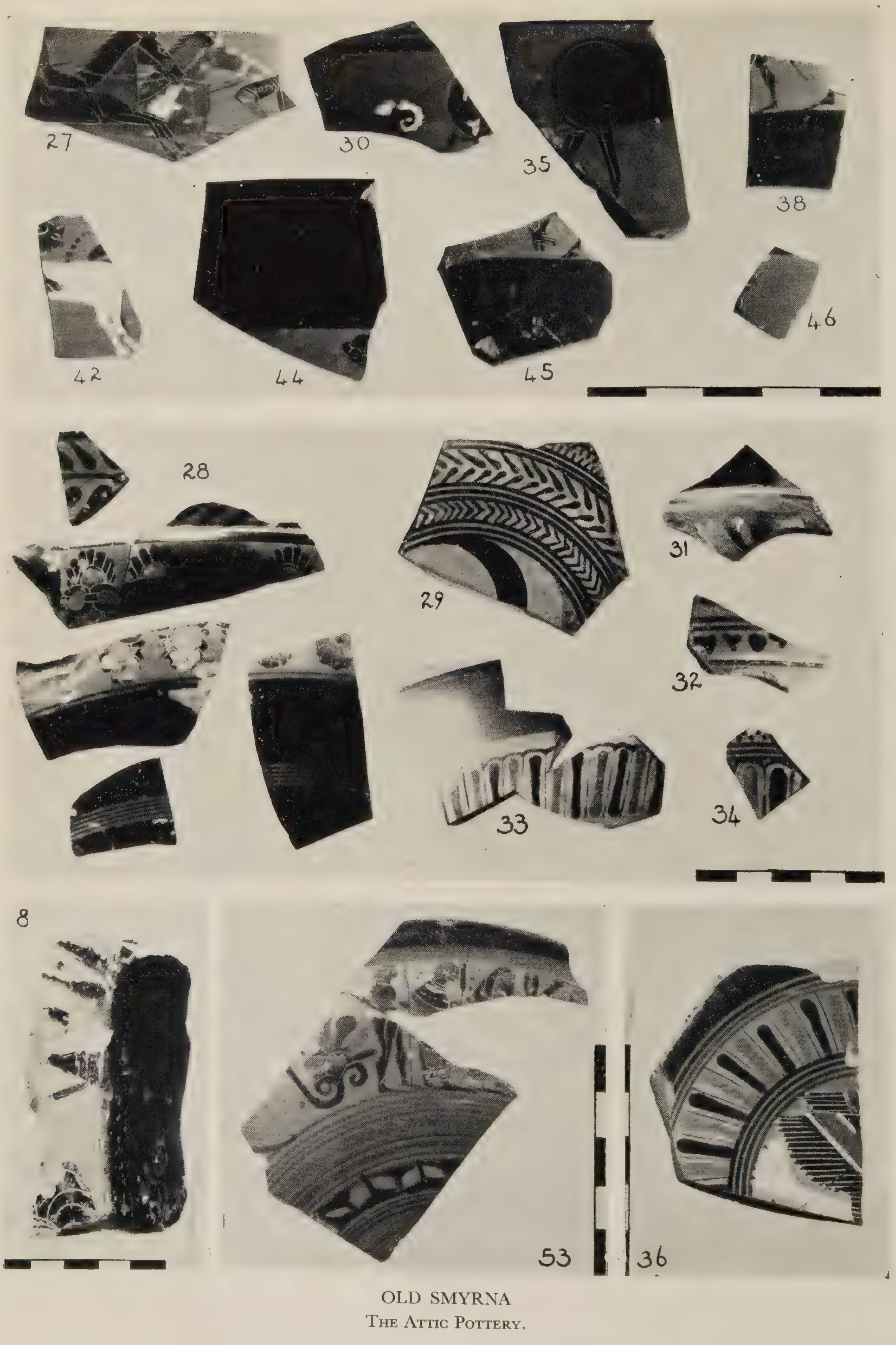
10

13

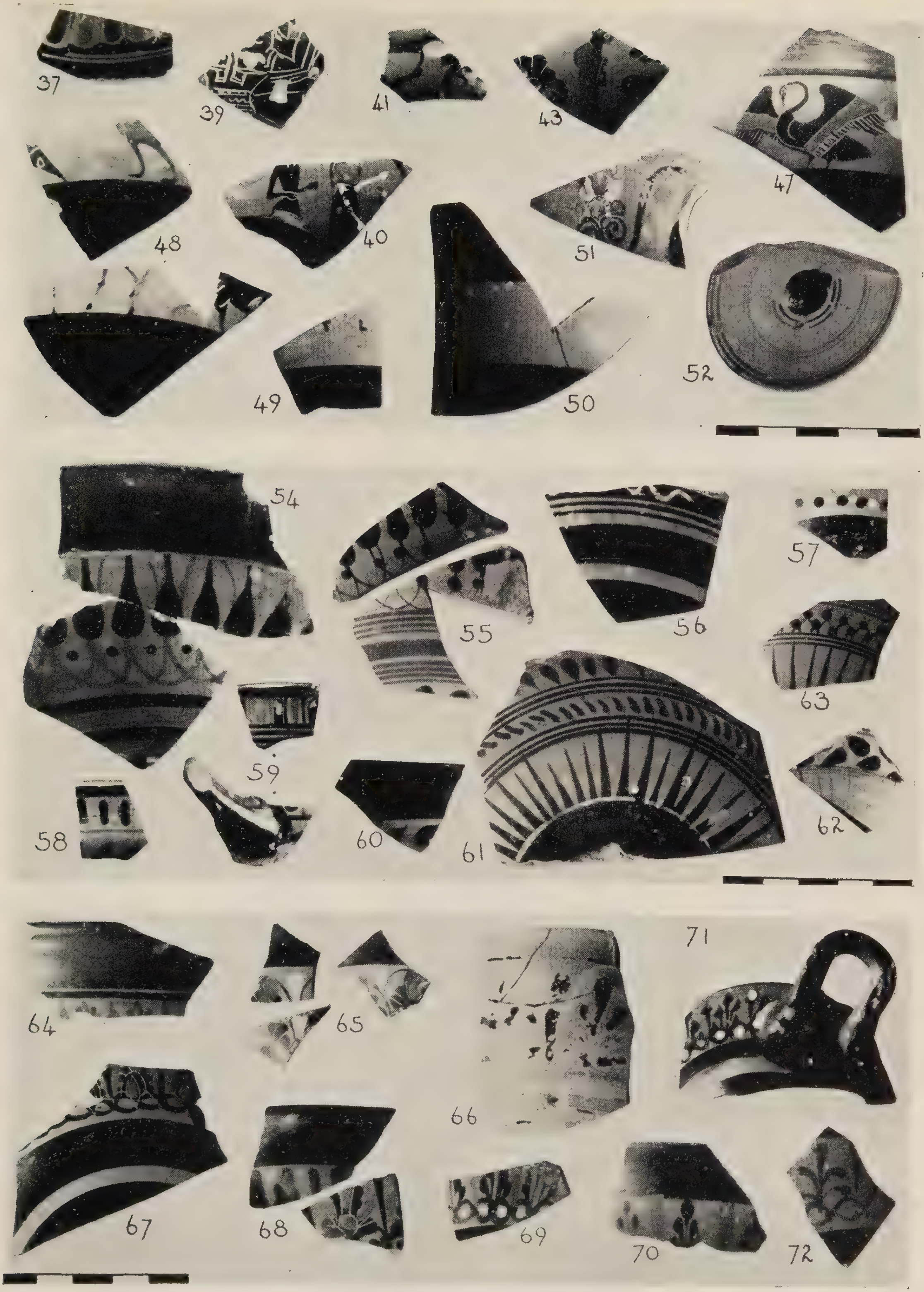
OLD SMYRNA
The Attic Pottery.


14
16
15
17.
19
18
22
23
24
20
9
3
11
4

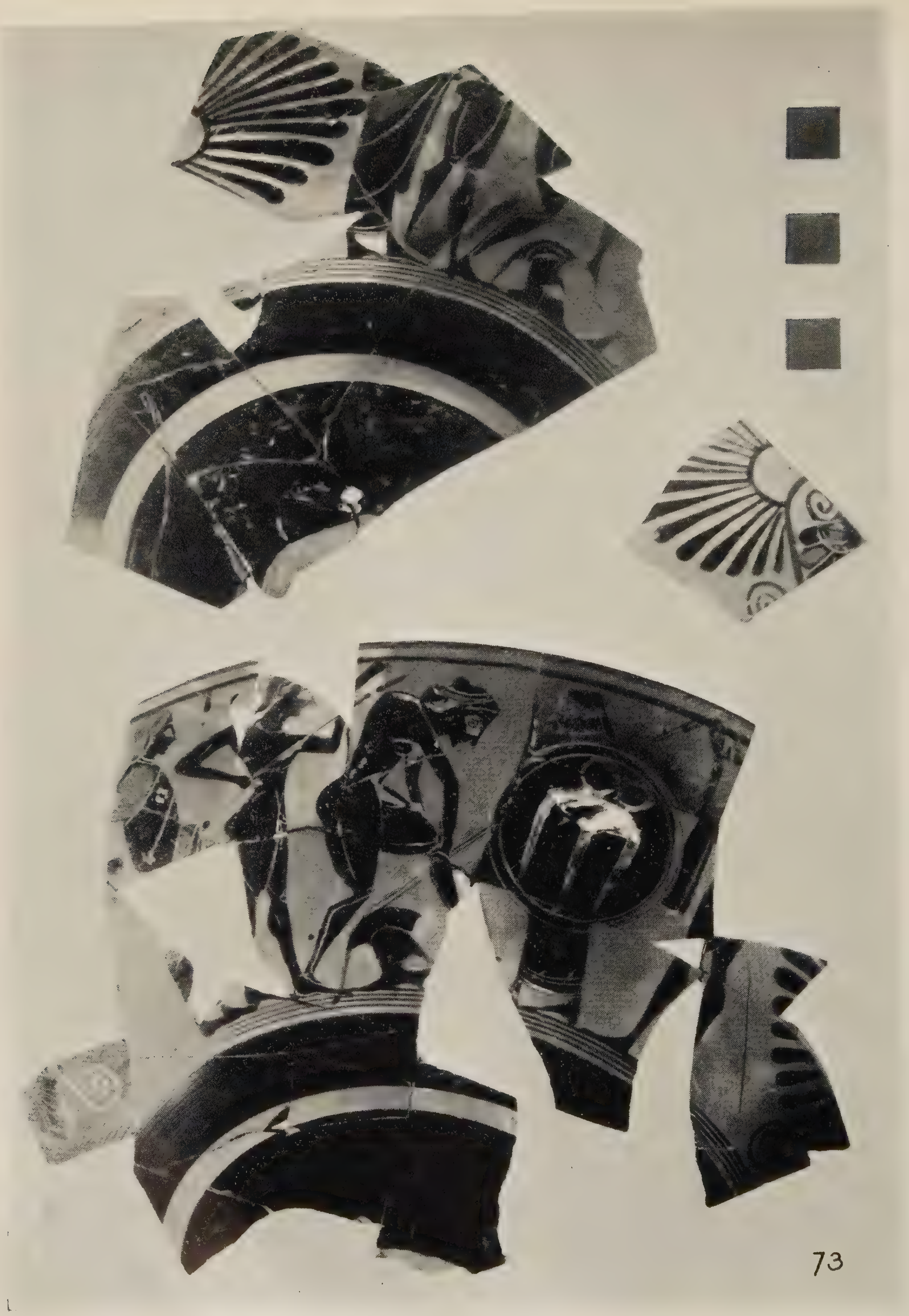
OLD SMYRNA
THE ATTIC POTTERY.


27
30
35
38
42
44
45
46
28
29
31
32
33
34
8
53
36

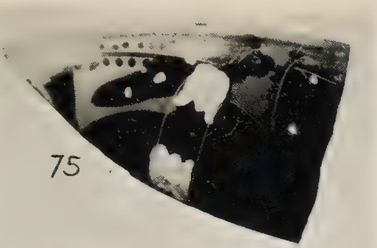
OLD SMYRNA
THE ATTIC POTTERY.

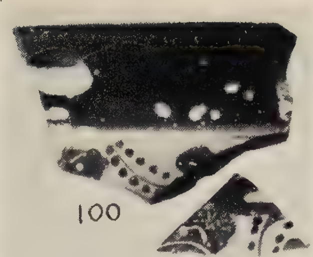

37
39
41
43
47
48
40
51
52
49
50
54
55
56
57
63
59
58
60
61
62
64
65
66
71
67
68
69
70
72

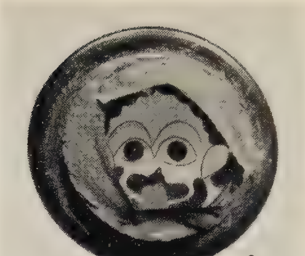
OLD SMYRNA
The Attic Pottery.

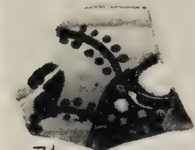


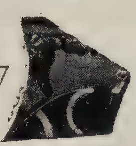
OLD SMYRNA
THE ATTIC POTTERY.

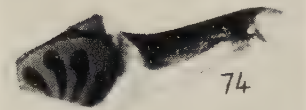

75

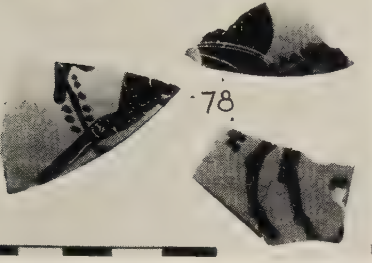

100

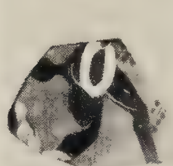

82

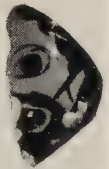

76

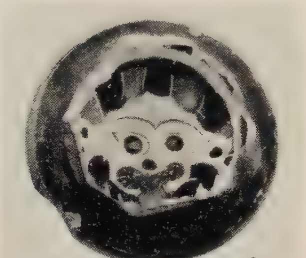

77

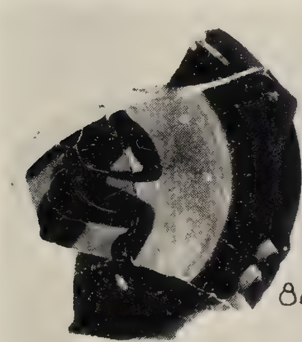

74

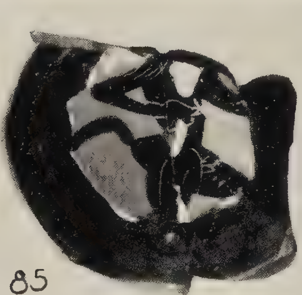

78

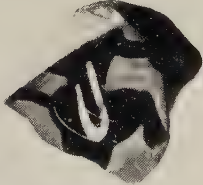

80

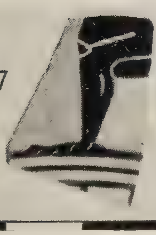

81

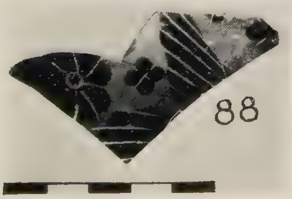

83

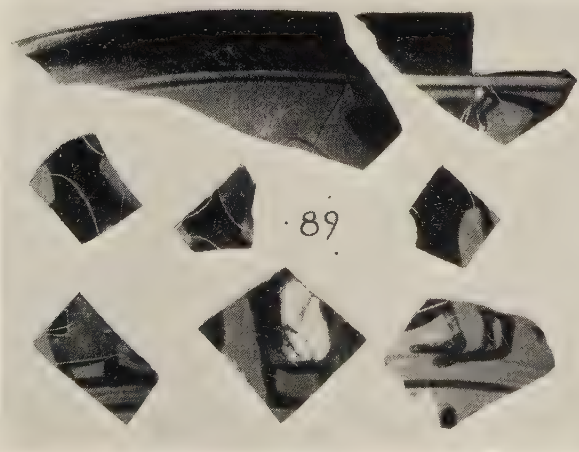

84

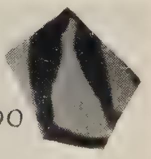

85

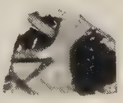

86

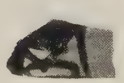

87


88

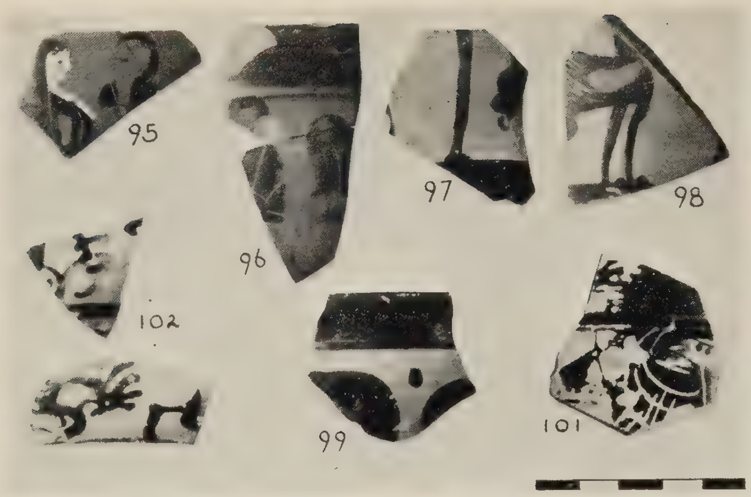

89

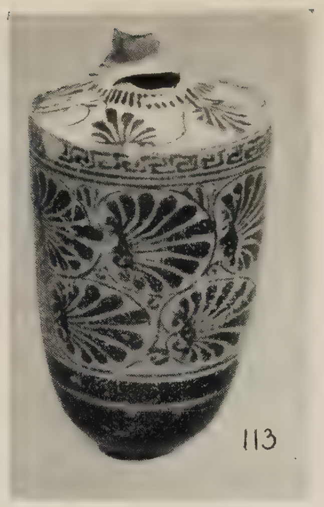

90

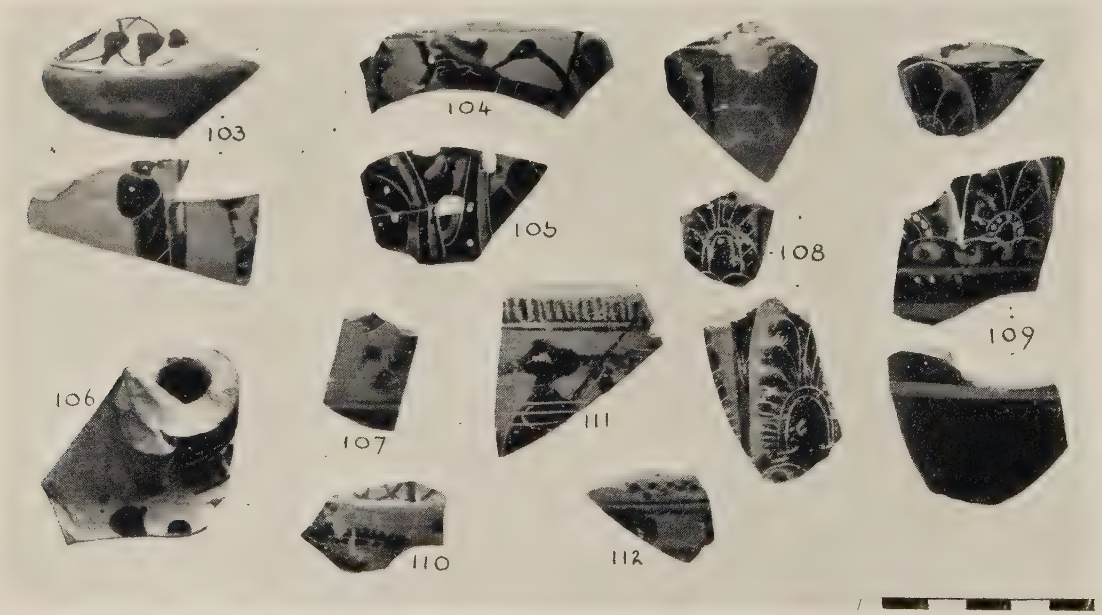

93

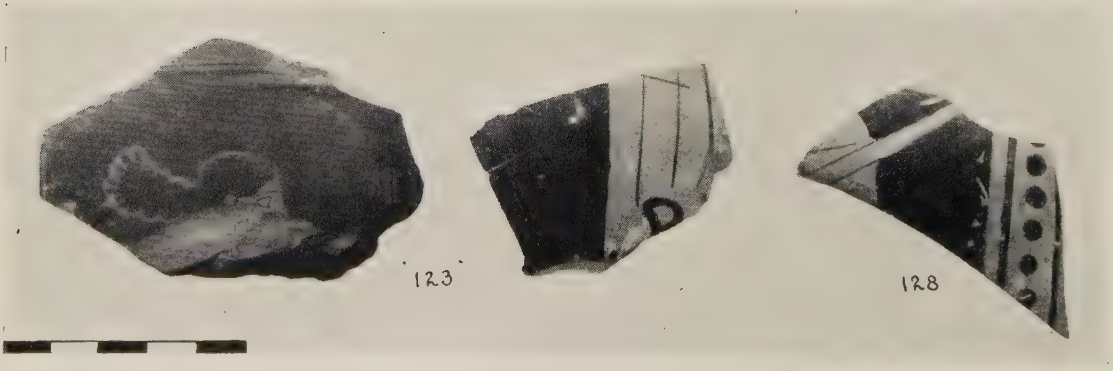

94

OLD SMYRNA
THE ATTIC POTTERY.

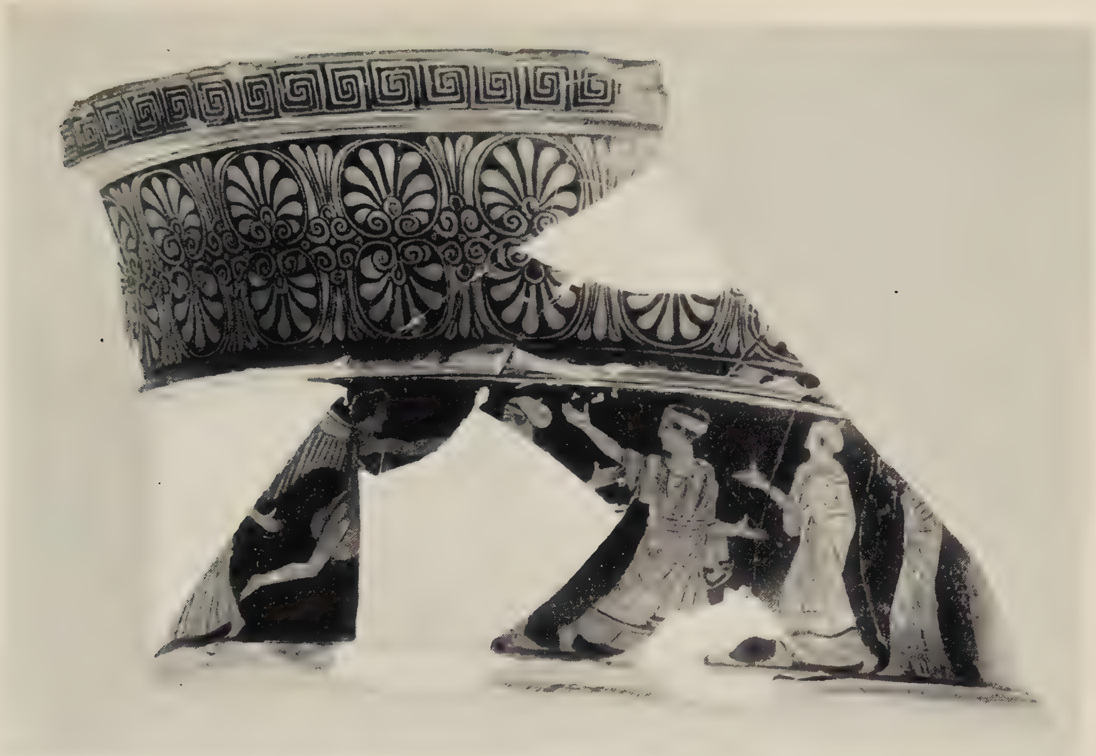

95
96
97
98
102
99
101

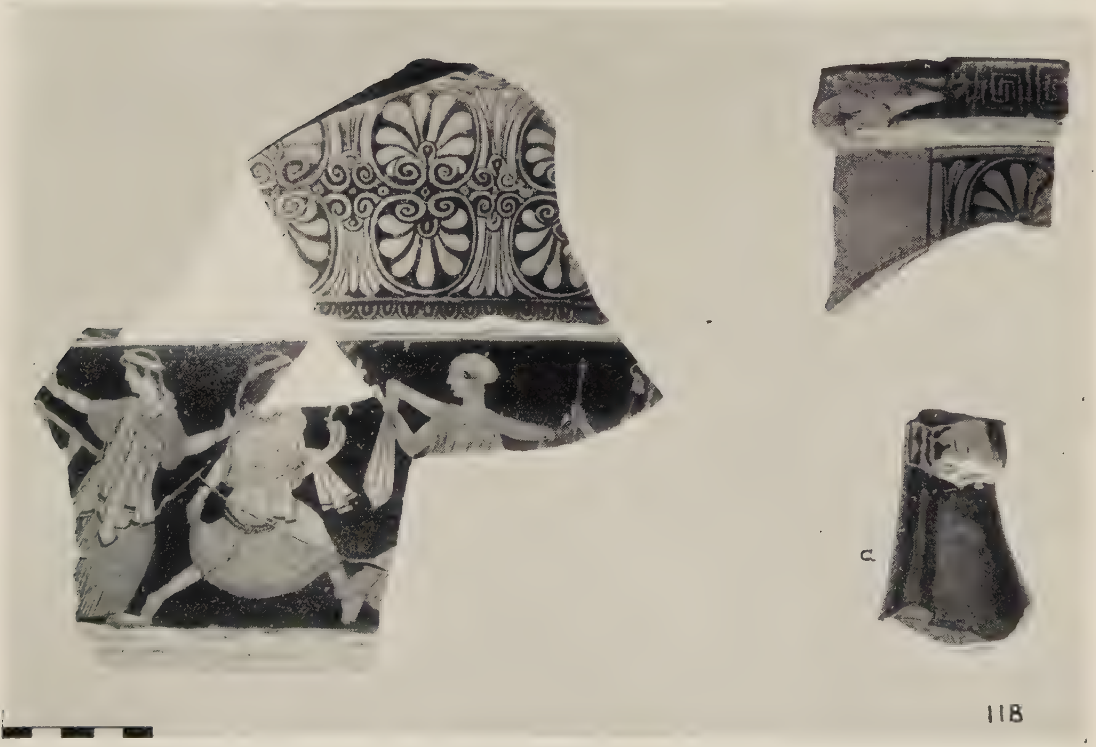



103
104
105
108
109
106
107
111
110
112

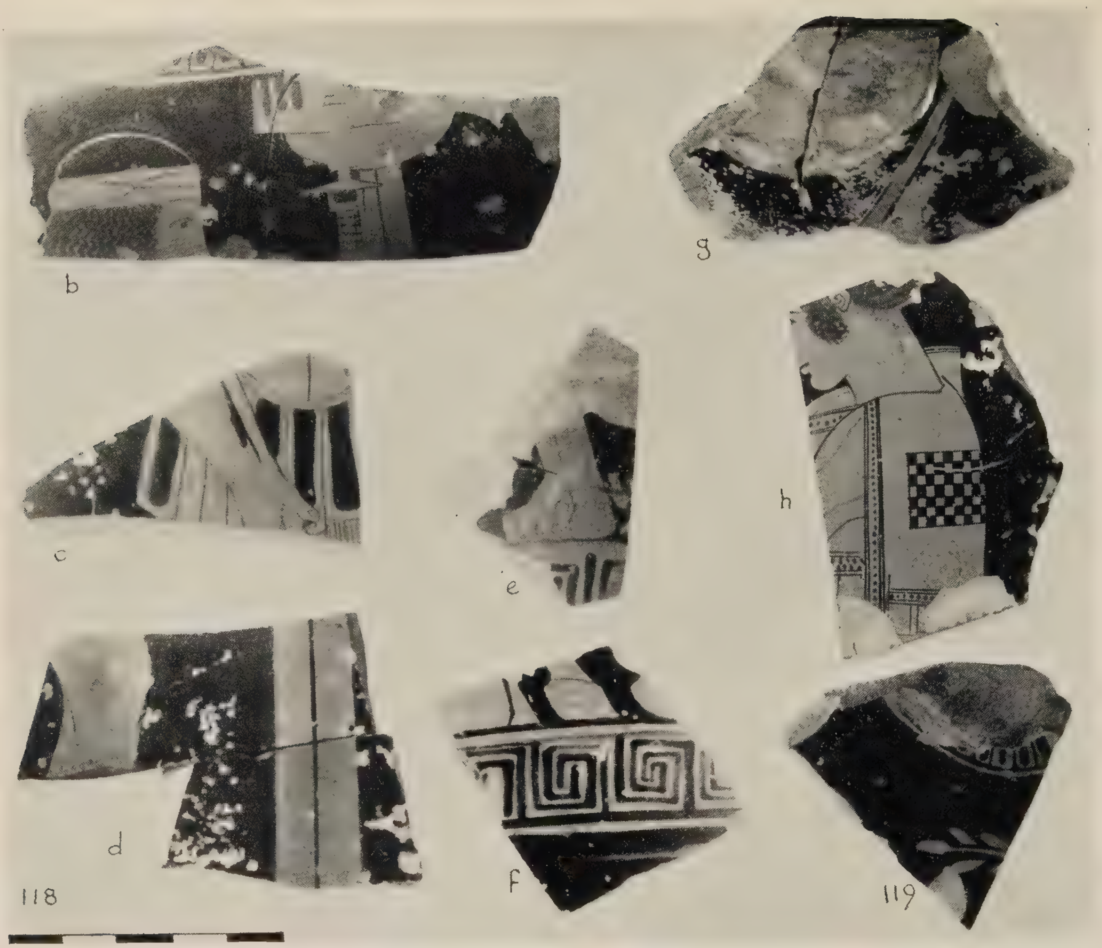


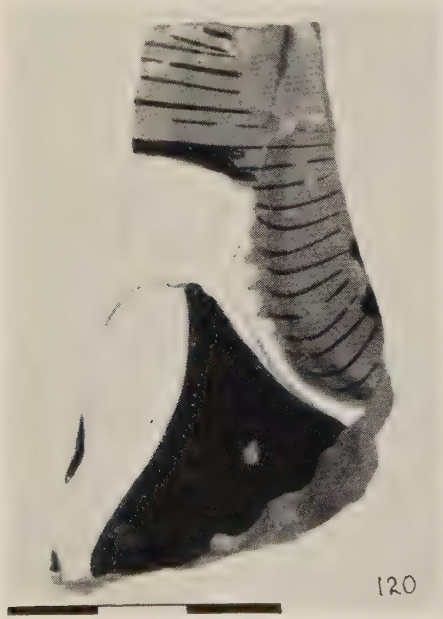
OLD SMYRNA
THE ATTIC POTTERY.

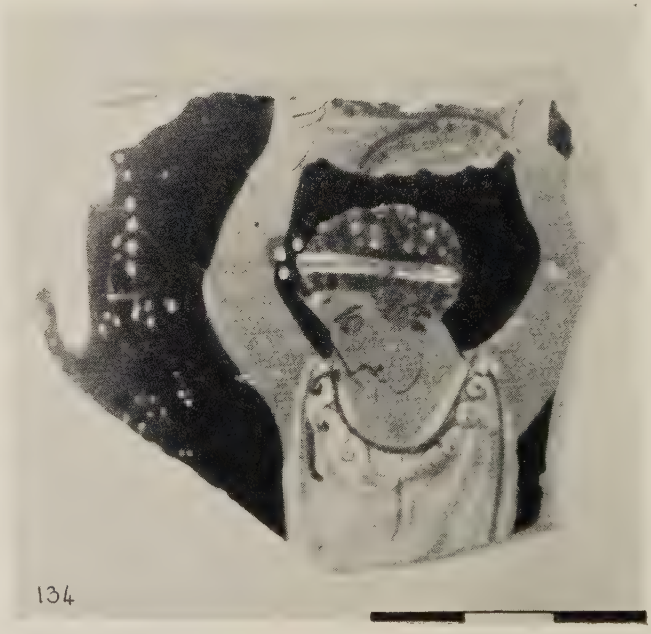




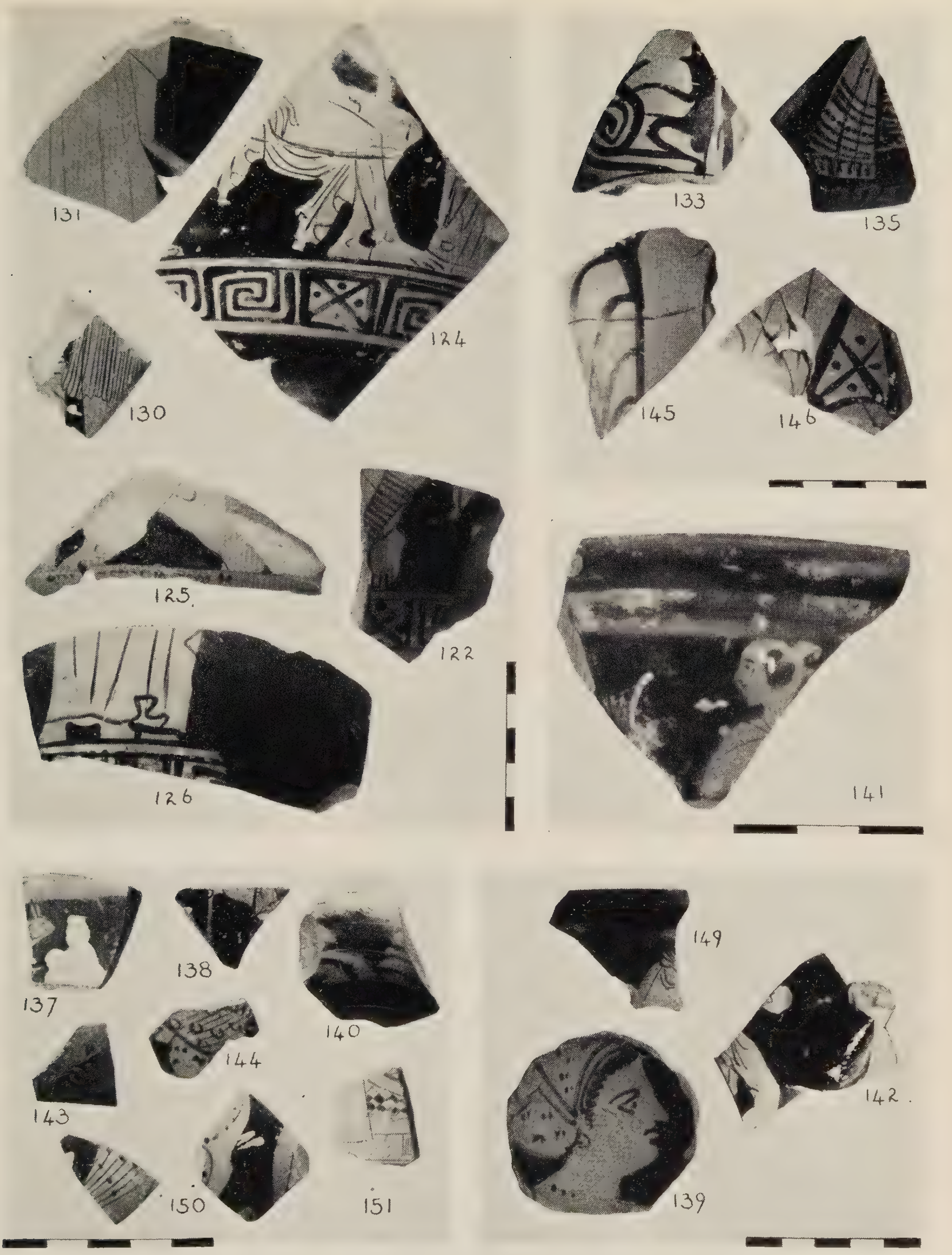
OLD SMYRNA
THE ATTIC POTTERY.


b
g
c
e
h
d
f
118
119

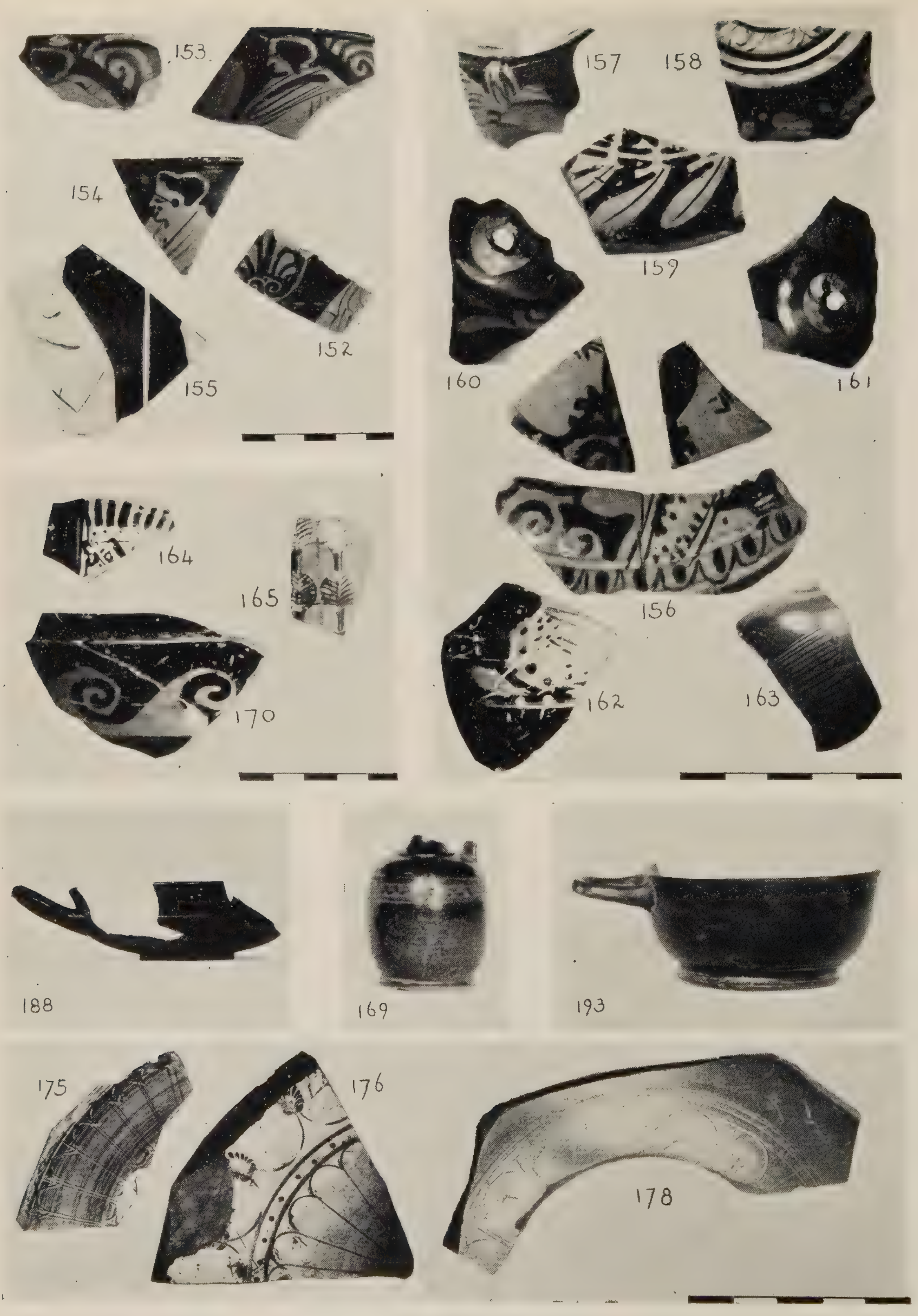




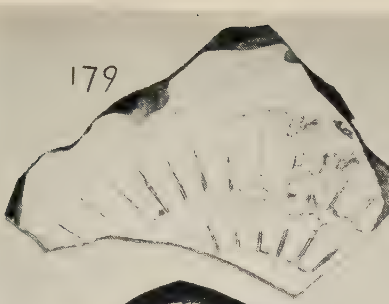
OLD SMYRNA
THE ATTIC POTTERY.

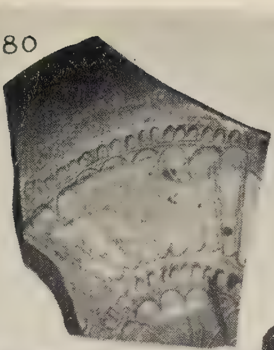

131
124
130
133
135
145
146
125.
122
126
141
137
138
140
144
143
150
151
149
142.
139

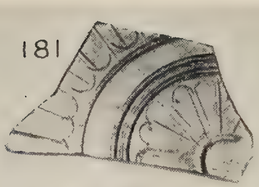
OLD SMYRNA
THE ATTIC POTTERY.

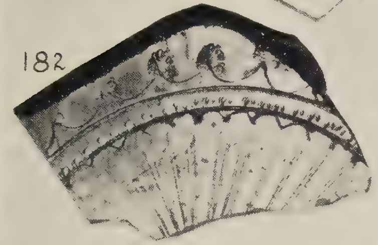

153
157
158
154
159
152
160
161
155
164
165
156
170
162
163
188
169
193
175
176
178

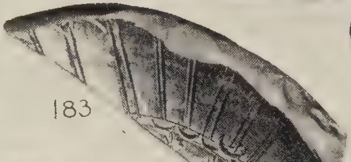
OLD SMYRNA
The Attic Pottery.

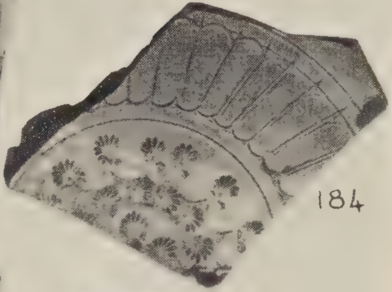

179

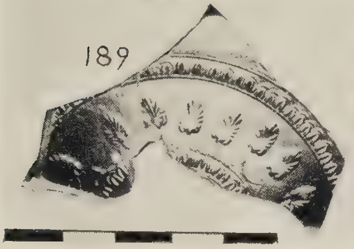

180

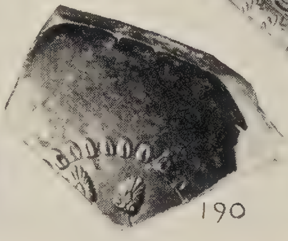

181

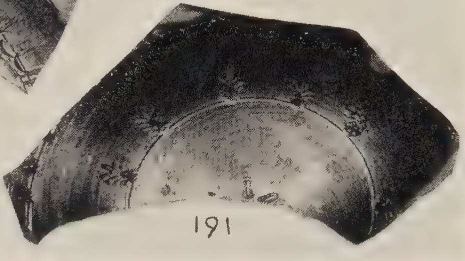

182

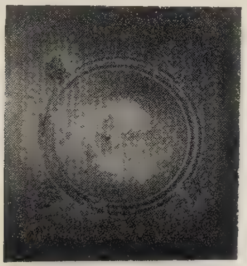

183

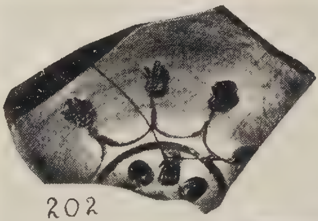

184

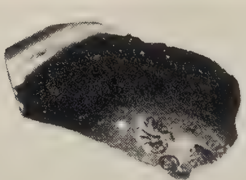

189

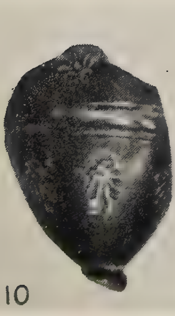

190

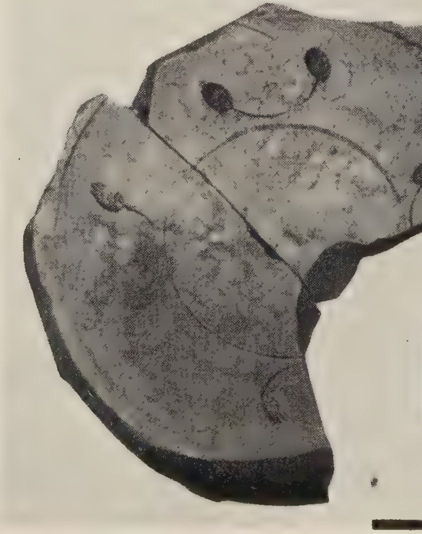

191

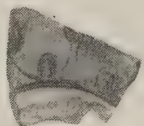

194


202

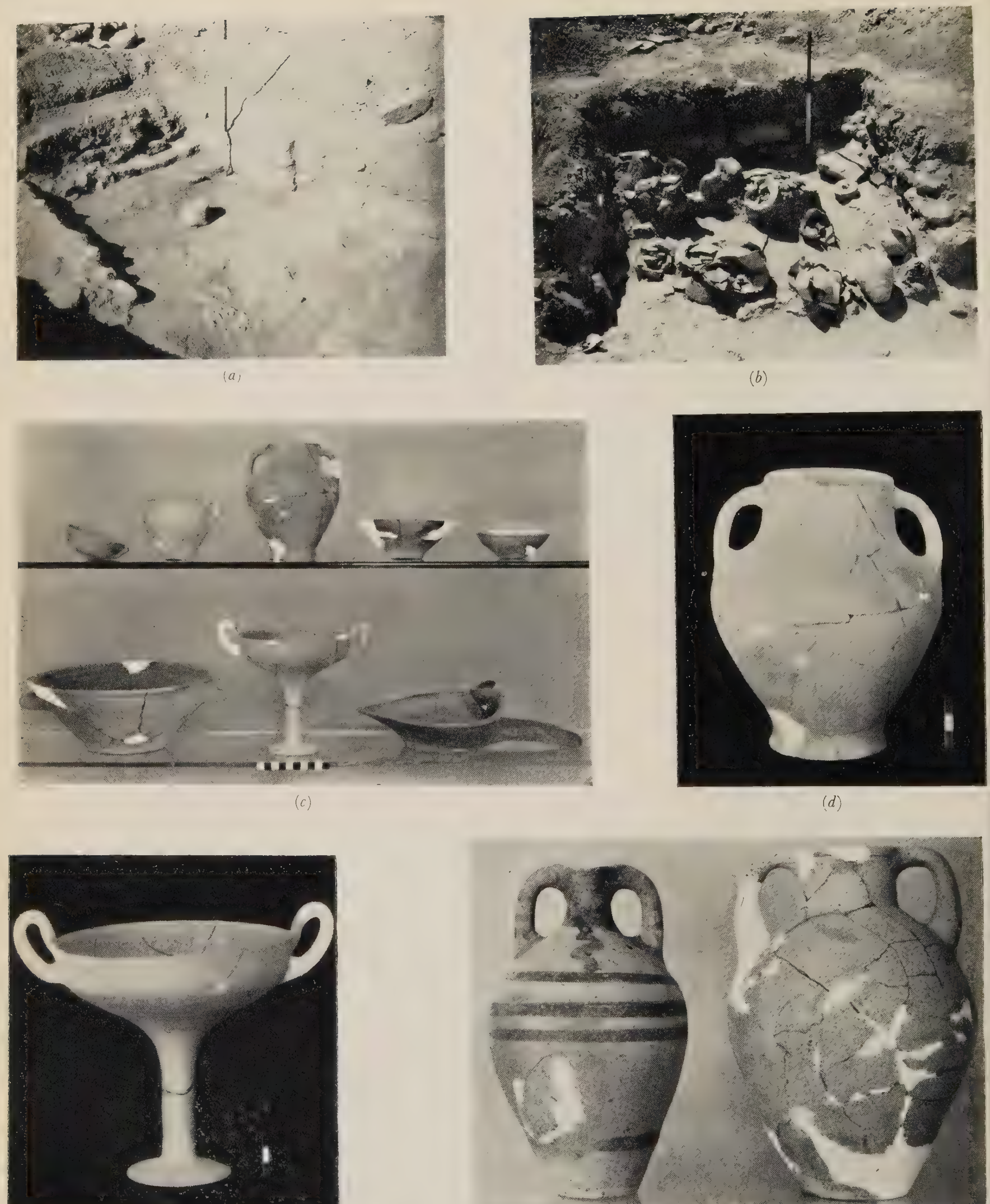

203


210


216


217

OLD SMYRNA
The Attic Pottery.



(*a*)

(*b*)

(*c*)

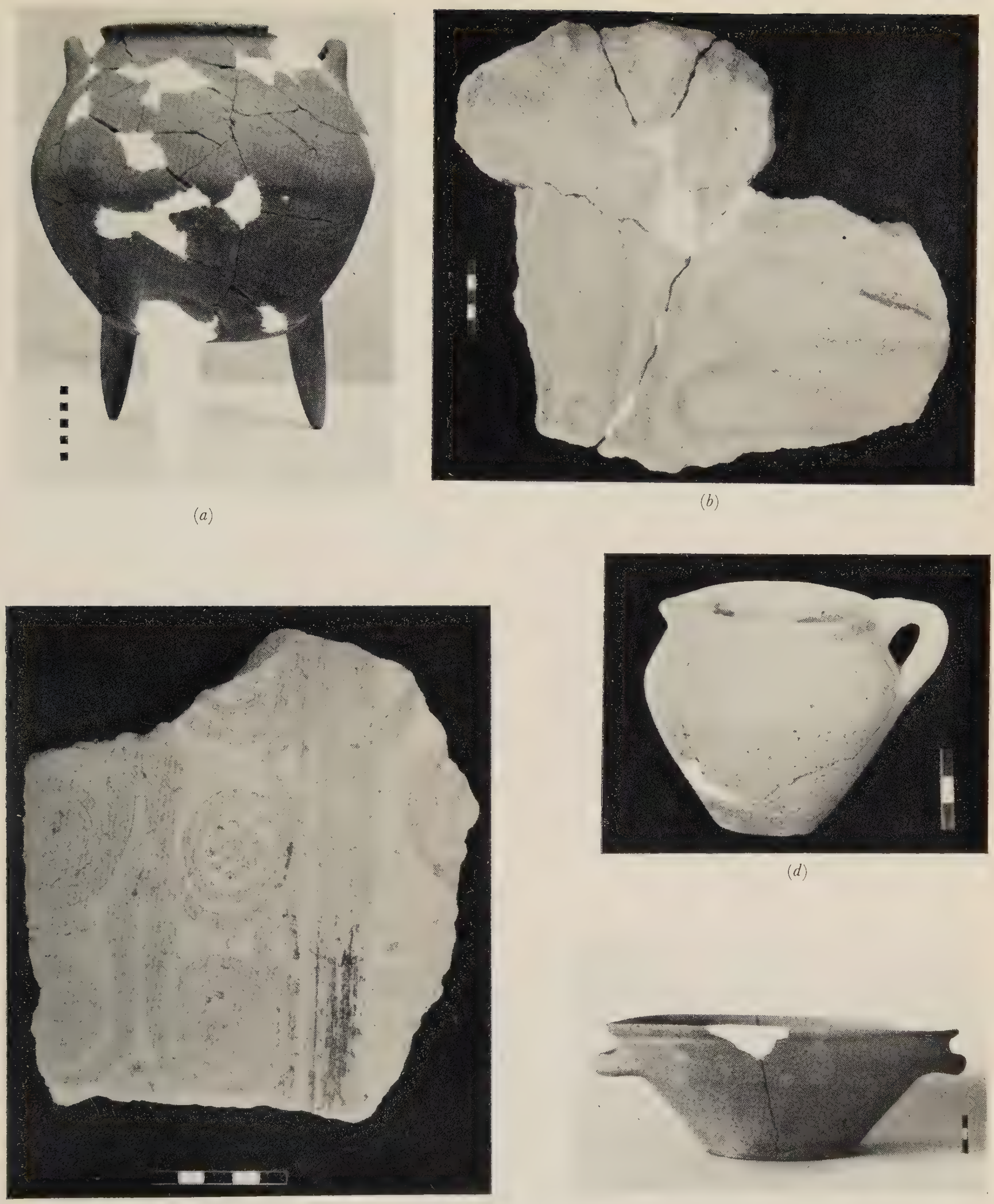
(*d*)

(*e*)

(*f*)

A L.M. III 'KITCHEN' AT MAKRITIKHOS

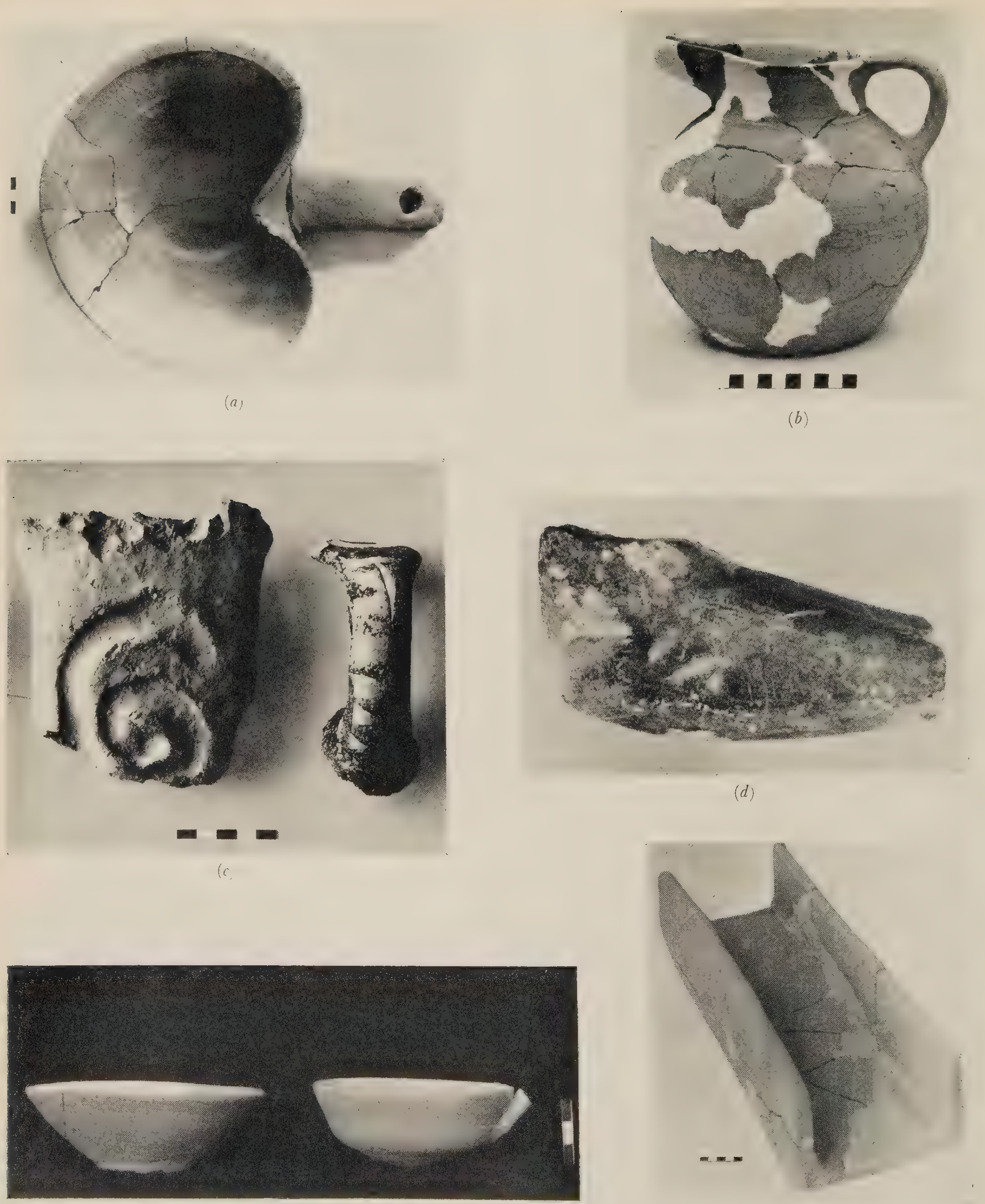
(*a*) South end of Kitchen with door in back wall (to r. of ranging-pole) and fallen column base. (*b*) North end of Kitchen with vases before removal. (*c*) Vases (l. to r.) (*top row*) **14, 17, 5, 9, 10**; (*bottom row*) **11, 1, 13.** (*d*) Amphora **5.** (*e*) Kylix **1.** (*f*) Amphorae **3, 4.**



(a) (b) (c) (d) (e)

A L.M. III 'KITCHEN' AT MAKRITIKHOS

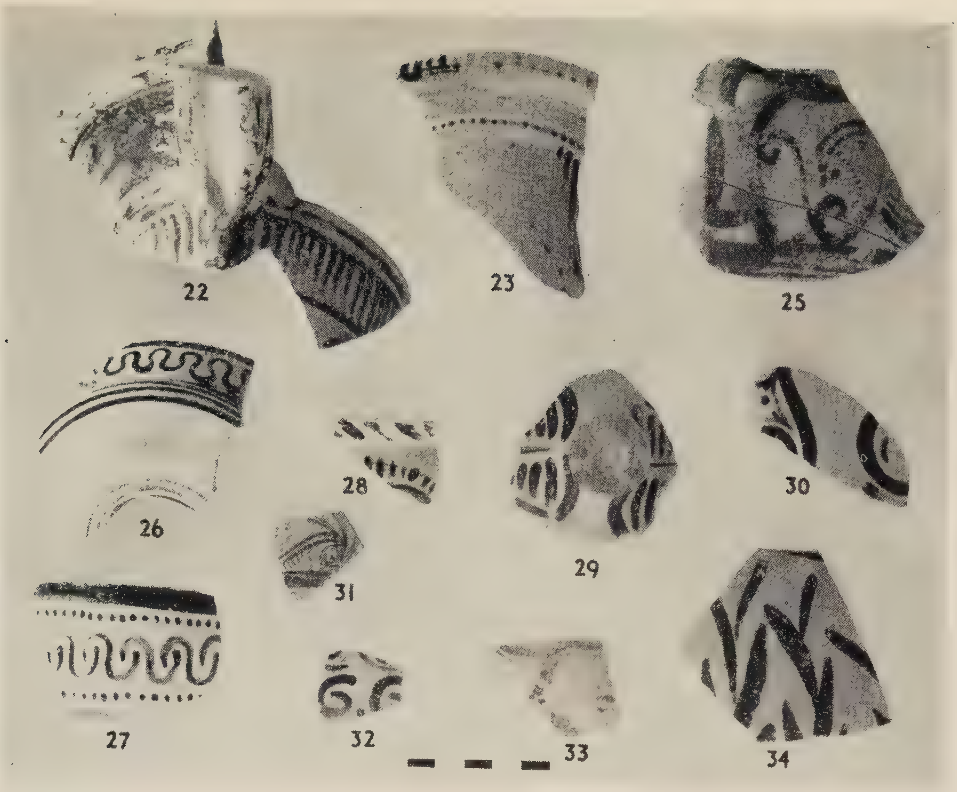
(a) Tripod cauldron **12**. (b) Sherd from larnax **20**. (c) Sherd from pithos or larnax **21**. (d) Jug **17**. (e) Bowl **11**.



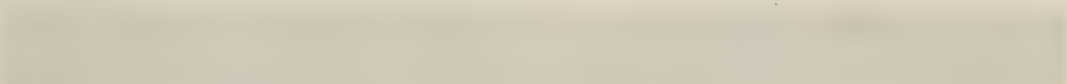
(*a*) (*b*) (*c*) (*d*) (*e*) (*f*)

A L.M. III 'KITCHEN' AT MAKRITIKHOS

(*a*) CHAFING DISH **13.** (*b*) JUG **8.** (*c*) HANDLES **36, 35.** (*d*) ARM OF STONE STATUETTE **37.** (*e*) BOWL **10,** DIPPER **14.** (*f*) DRAIN CHANNEL **19.**


22
23
25
26
28
29
30
31
27
32
33
34

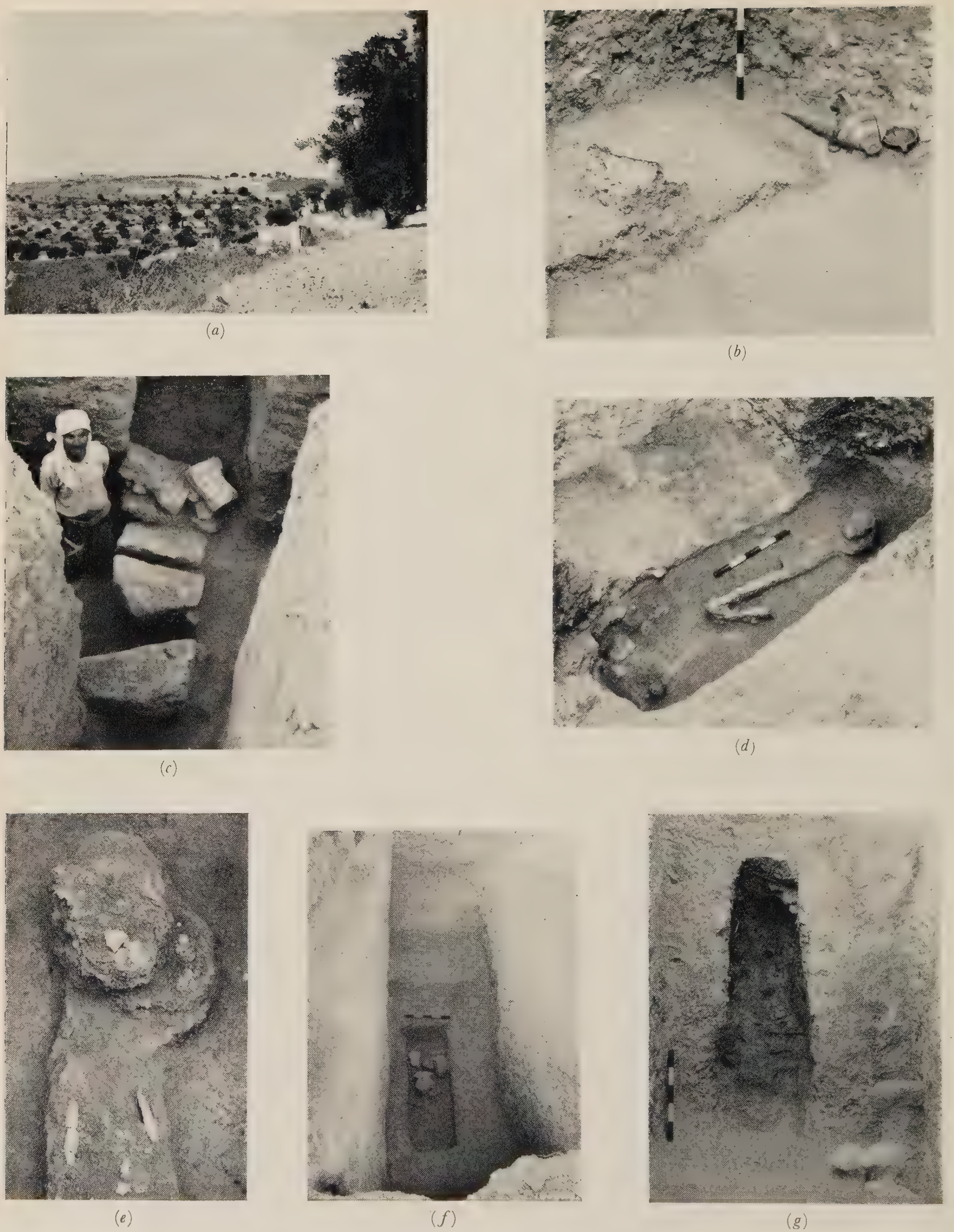
(*a*)



(*b*)

A L.M. III 'KITCHEN' AT MAKRITIKHOS

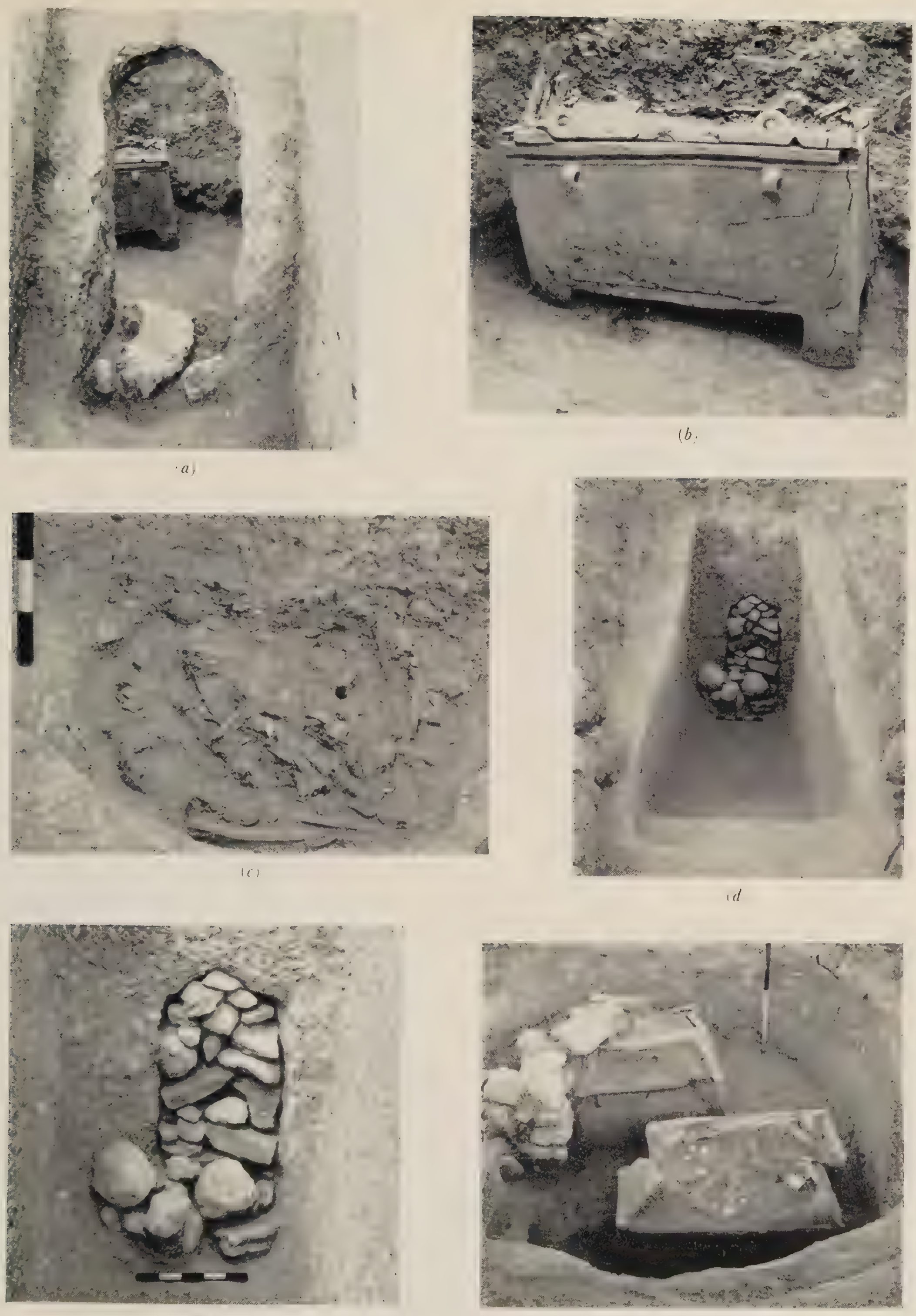
(*a*) SHERDS FROM FILL OF KITCHEN, ETC. (*b*) SPOUTED JAR **7**, LID **15**.



(*a*) (*b*) (*c*) (*d*) (*e*) (*f*) (*g*)

A MINOAN CEMETERY ON UPPER GYPSADES

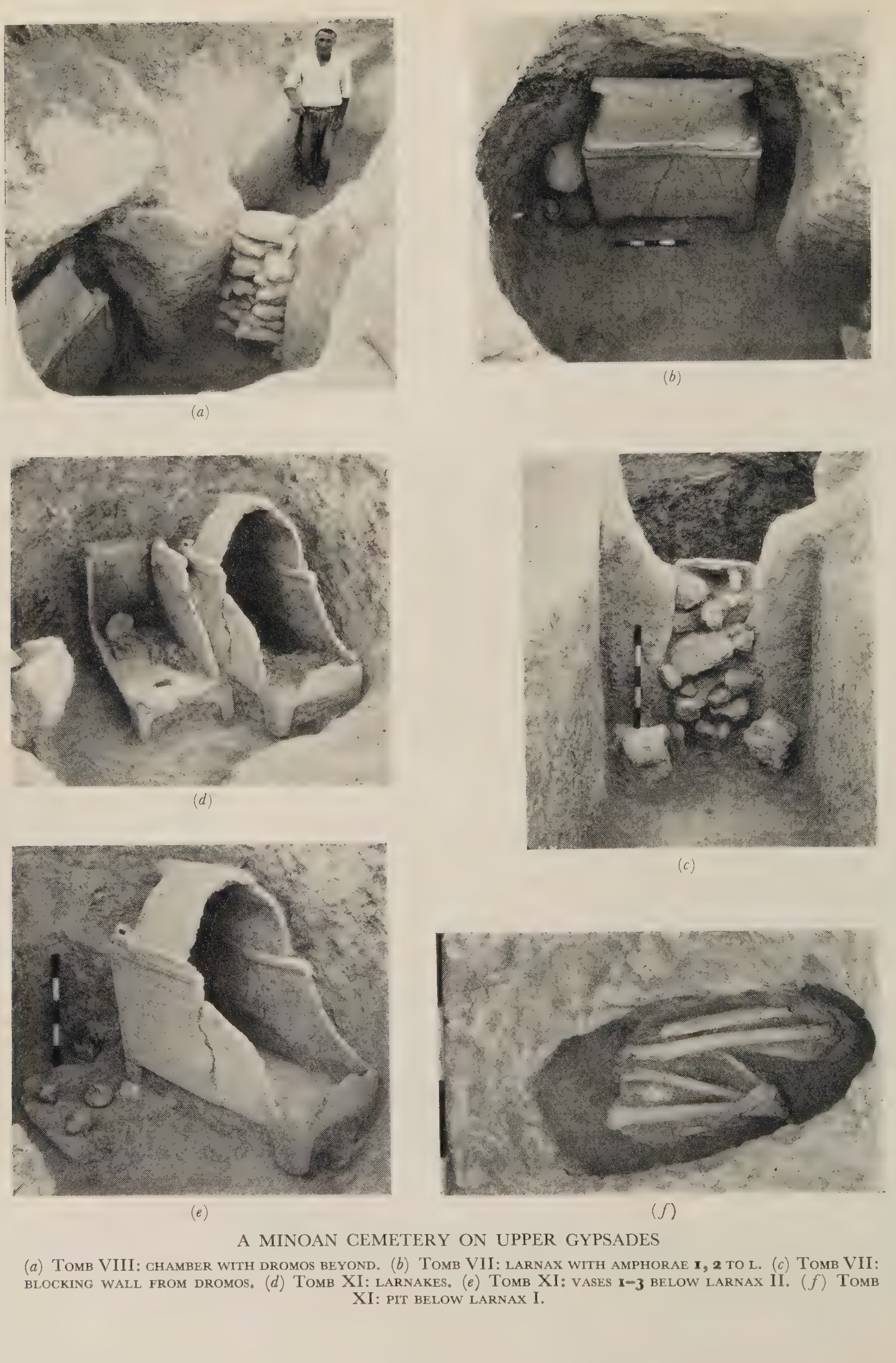
(*a*) View from the east (the cemetery is in the white field below the skyline in the centre). (*b*) Tomb I: chamber with traces of wooden coffin; bronzes **5, 6** to l., vases **1–3** to r. (*c*) Tomb II: covering slabs over grave. (*d*) Tomb II: remains of burial. (*e*) Tomb II: skull with beads **4–10** to r. (*f*) Tomb III: pit in dromos. (*g*) Tomb III: chamber.



(a) (b) (c) (d) (e) (f)

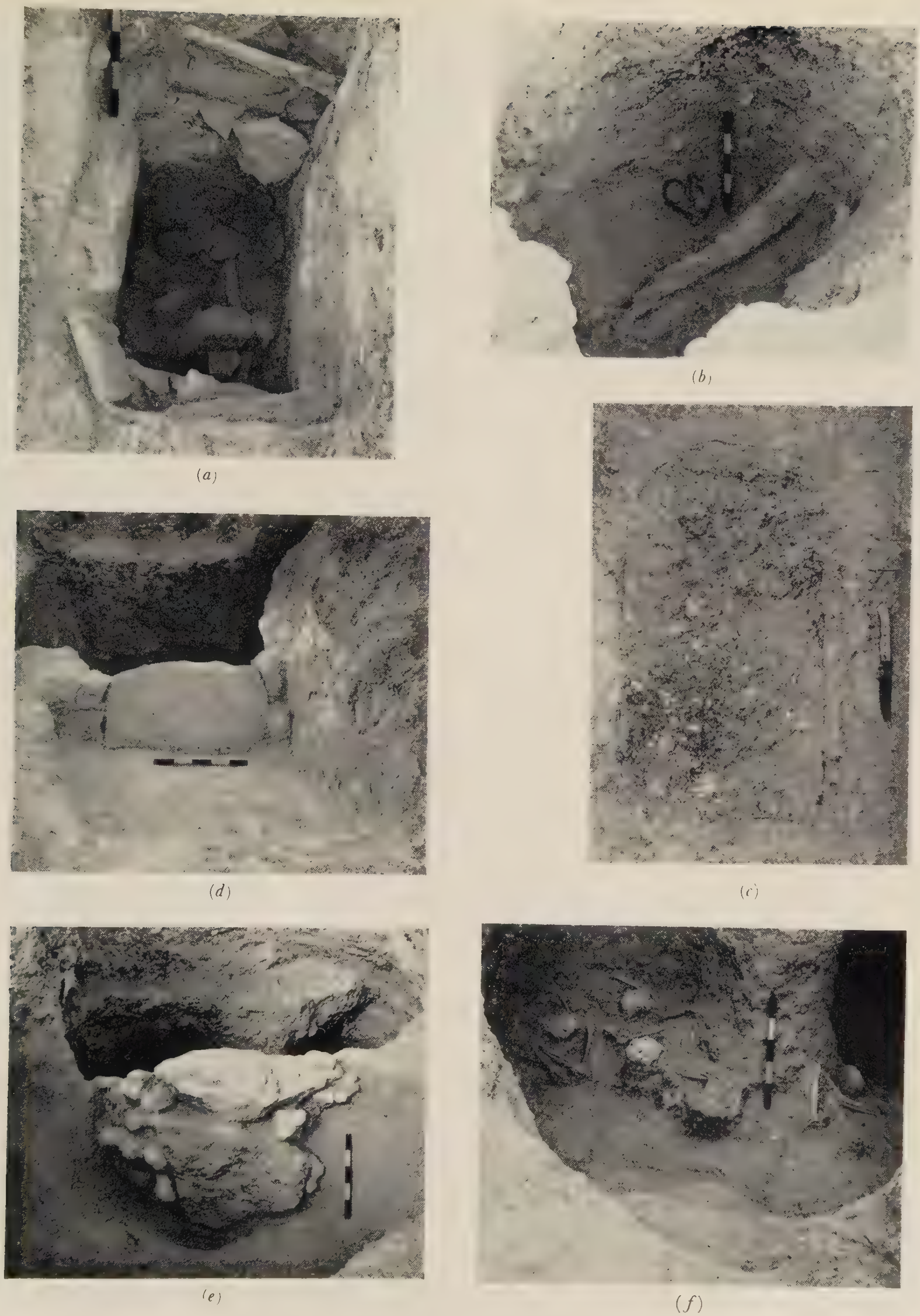
A MINOAN CEMETERY ON UPPER GYPSADES

(*a*) TOMB IV: ENTRANCE TO CHAMBER. (*b*) TOMB IV: LARNAX. (*c*) TOMB IV: PIT BELOW LARNAX.
(*d*) TOMB V: DROMOS. (*e*) TOMB V: BLOCKING WALL. (*f*) TOMB VI: LARNAKES.



A MINOAN CEMETERY ON UPPER GYPSADES

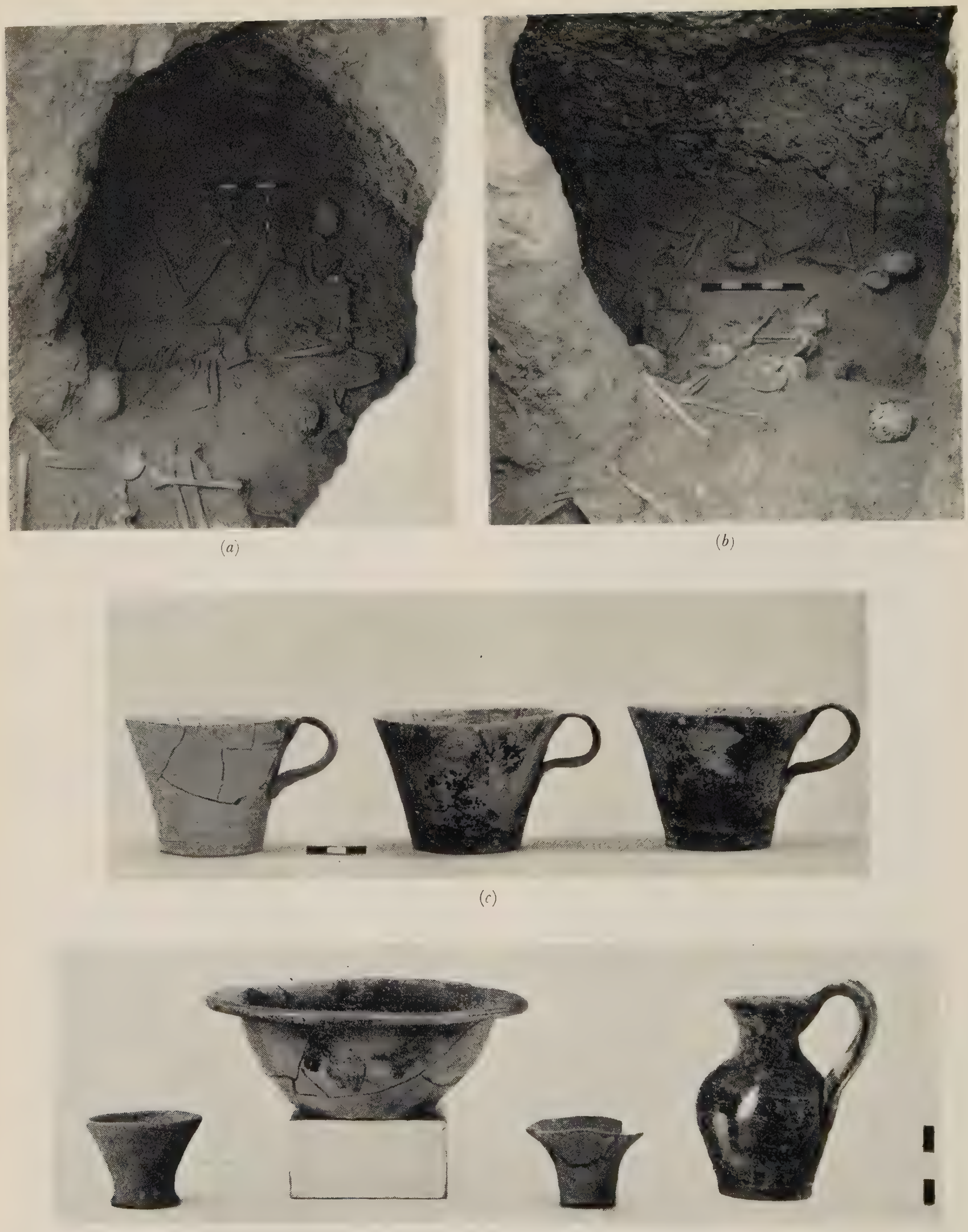
(*a*) Tomb VIII: chamber with dromos beyond. (*b*) Tomb VII: larnax with amphorae **1, 2** to l. (*c*) Tomb VII: blocking wall from dromos. (*d*) Tomb XI: larnakes. (*e*) Tomb XI: vases **1–3** below larnax II. (*f*) Tomb XI: pit below larnax I.



(a) (b) (d) (c) (e) (f)

A MINOAN CEMETERY ON UPPER GYPSADES

(*a*) Tomb XII, with remains of larnax in grave. (*b*) Tomb XV: traces of wooden coffin in foreground. (*c*) Tomb X: remains of wooden box with bead **14** (bottom l.). (*d*) Tomb VIII: blocking slab from dromos. (*e*) Tomb XVIII: blocking wall from antechamber. (*f*) Tomb XVIII: burials VII–IX in south part of chamber.



(a)

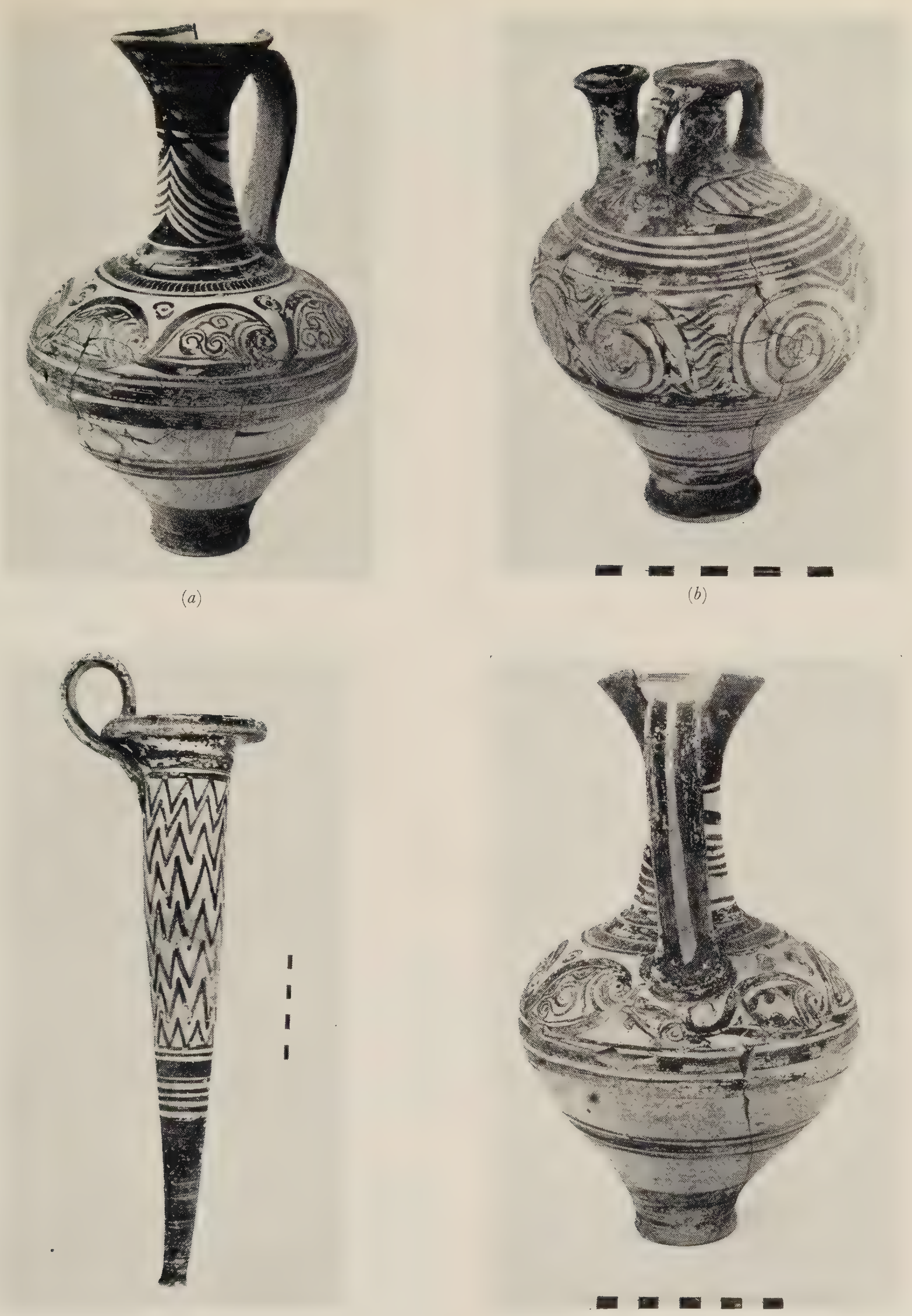
(b)

(c)

(d)

A MINOAN CEMETERY ON UPPER GYPSADES

(*a*) Tomb XVIII: burials I, II in north part of chamber. (*b*) Tomb XVIII: north chamber with burials III (far r.), IV–VI (in foreground). (*c*) Tomb XVIII: cups from fill, **12, 11, 10.** (*d*) Tomb XVIII: vases with burial III, **4, 1, 2, 3.**

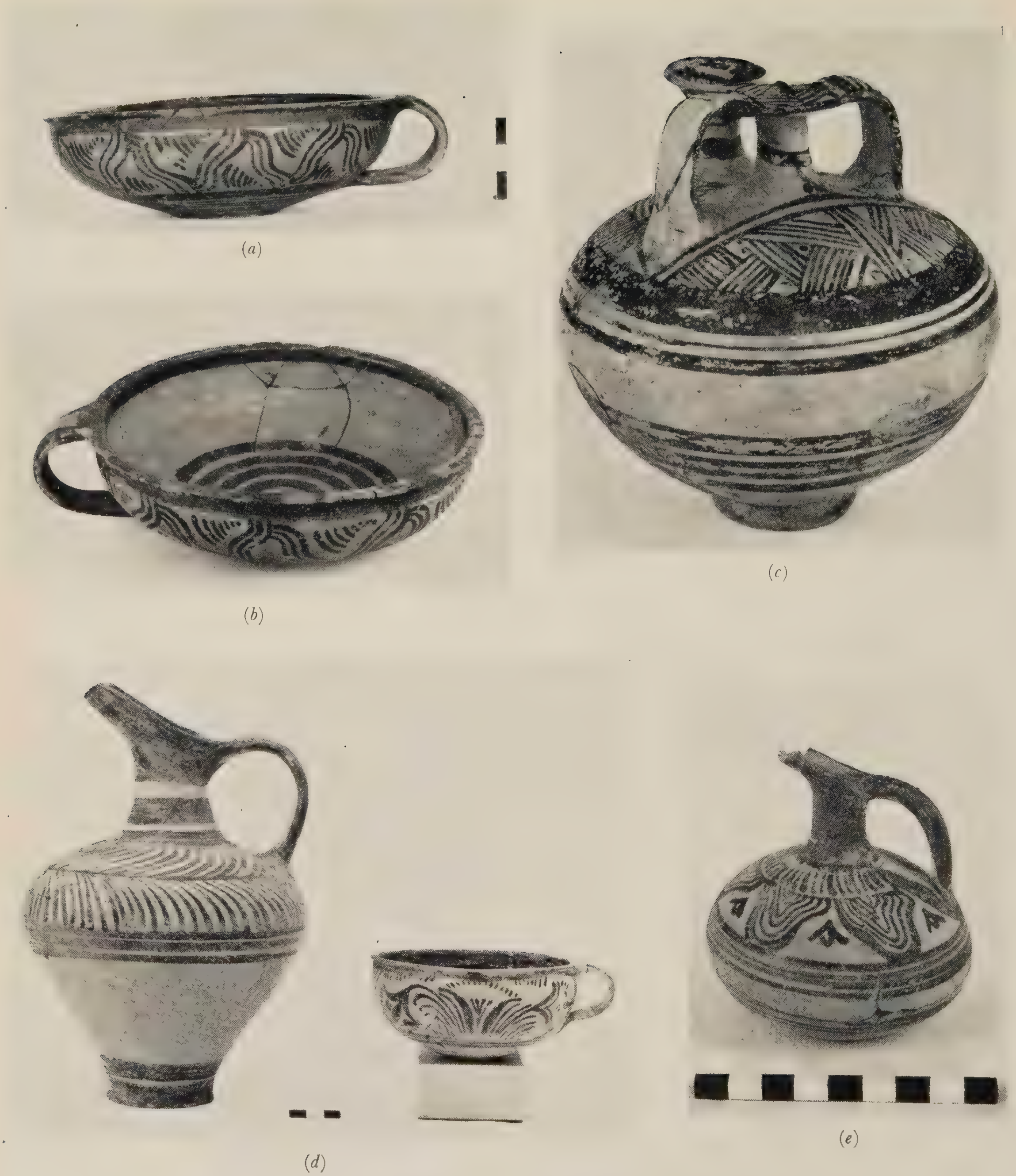


(a) (b)

(c) (d)

A MINOAN CEMETERY ON UPPER GYPSADES

(*a*),(*d*) I. **2,** JUG. (*b*) I. **4,** STIRRUP JAR. (*c*) I. **1,** RHYTON.



(*a*)

(*b*)

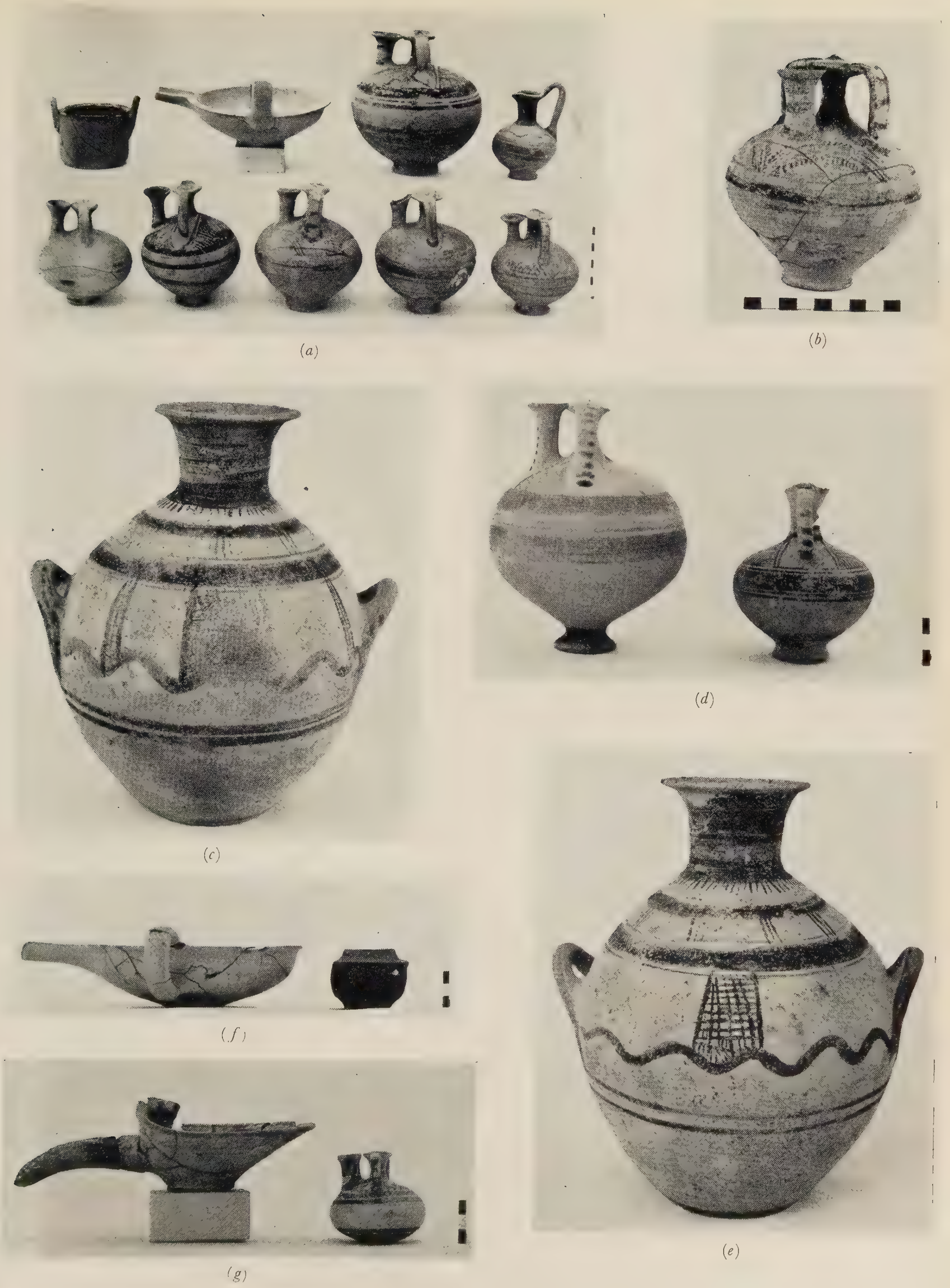
(*c*)

(*d*)

(*e*)

A MINOAN CEMETERY ON UPPER GYPSADES

(*a*), (*b*) I. **3**, cup. (*c*) VII. **4**, stirrup jar. (*d*) XV. **1**, **2**, jug and cup. (*e*) II. **1**, juglet.



(*a*)

(*b*)

(*c*)

(*d*)

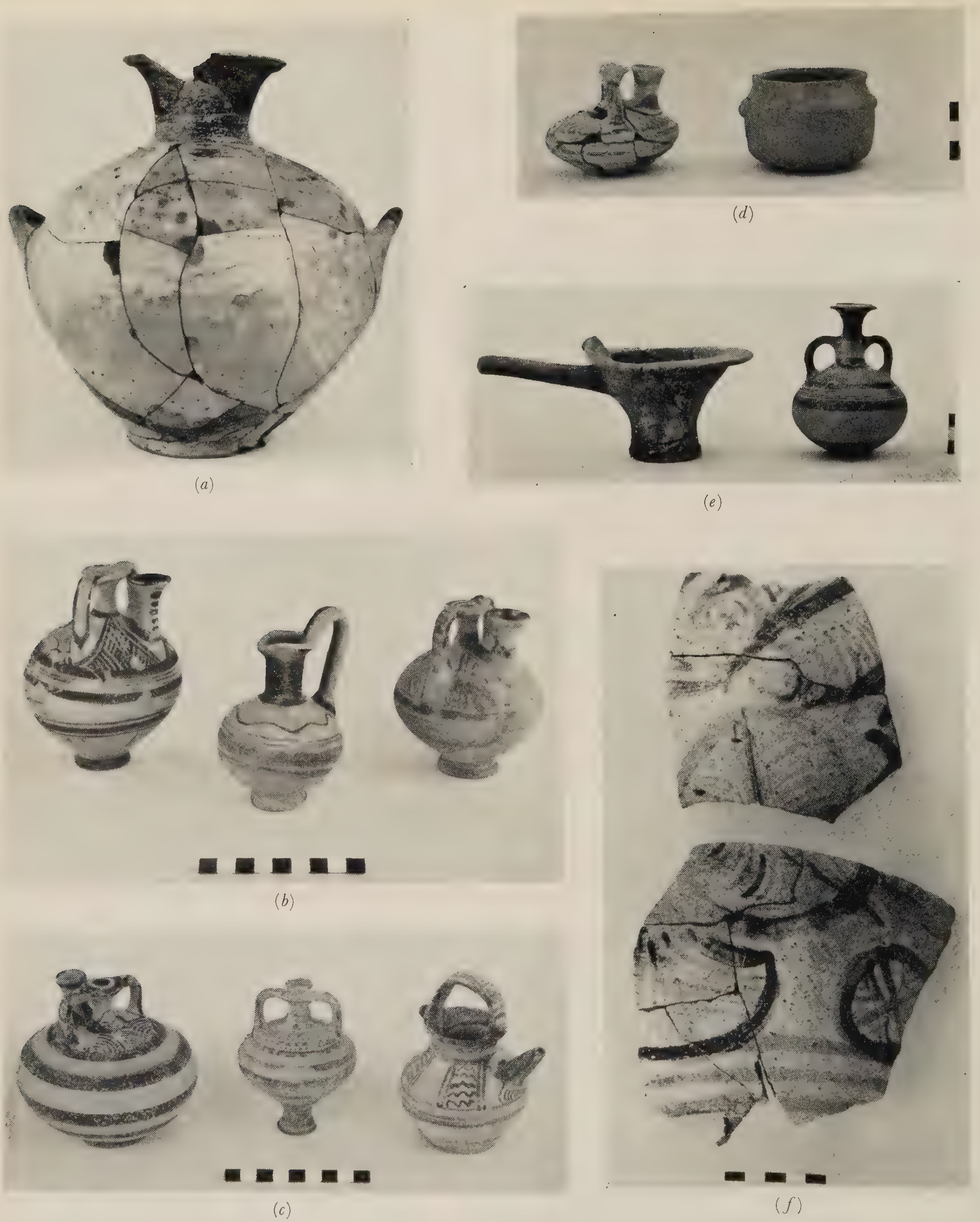
(*f*)

(*g*)

(*e*)

A MINOAN CEMETERY ON UPPER GYPSADES

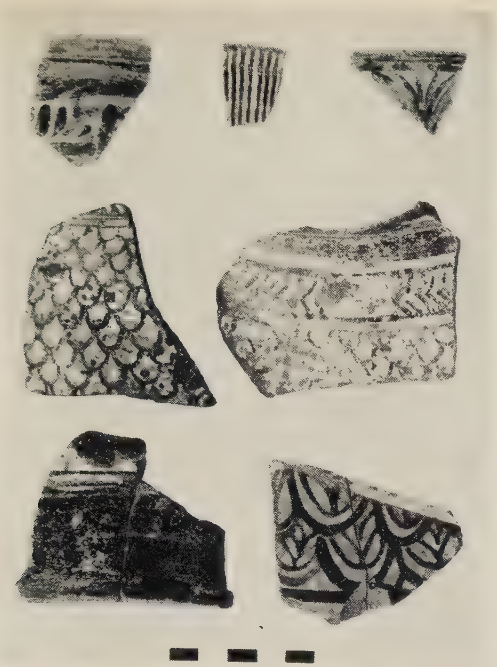
(*a*) Tomb VII: (*top*) **11, 10, 4, 9;** (*bottom*) **7, 6, 8, 5, 3.** (*b*) VII. **8,** stirrup jar. (*c*), (*e*) VII. **1,** amphora. (*d*) VIa. **1, 3,** stirrup jar and pilgrim flask. (*f*) VI. **1, 2.** (*g*) X. **2, 1.**



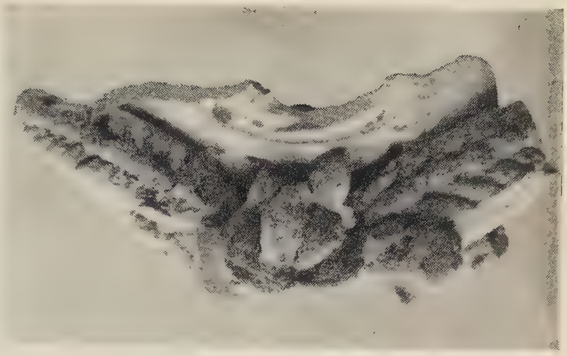
(*a*) (*b*) (*c*) (*d*) (*e*) (*f*)

A MINOAN CEMETERY ON UPPER GYPSADES

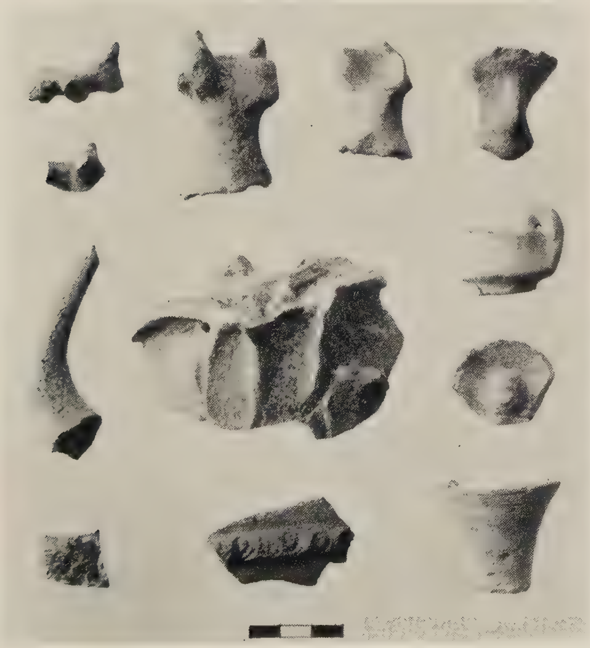
(*a*) VII. **2,** AMPHORA. (*b*) VII. **6, 9, 3,** STIRRUP JARS AND JUG. (*c*) XI. **2, 1, 3,** STIRRUP JARS AND DRINKING JAR. (*d*) IX. **1, 2.** (*e*) XIV. **2, 1.** (*f*) SHERDS FROM LARGE JAR (p. 226).



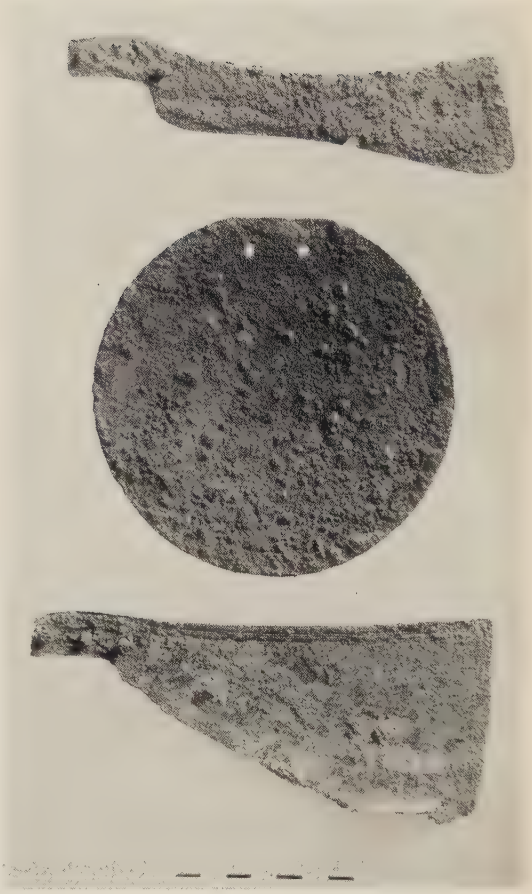
(*a*)



(*c*)



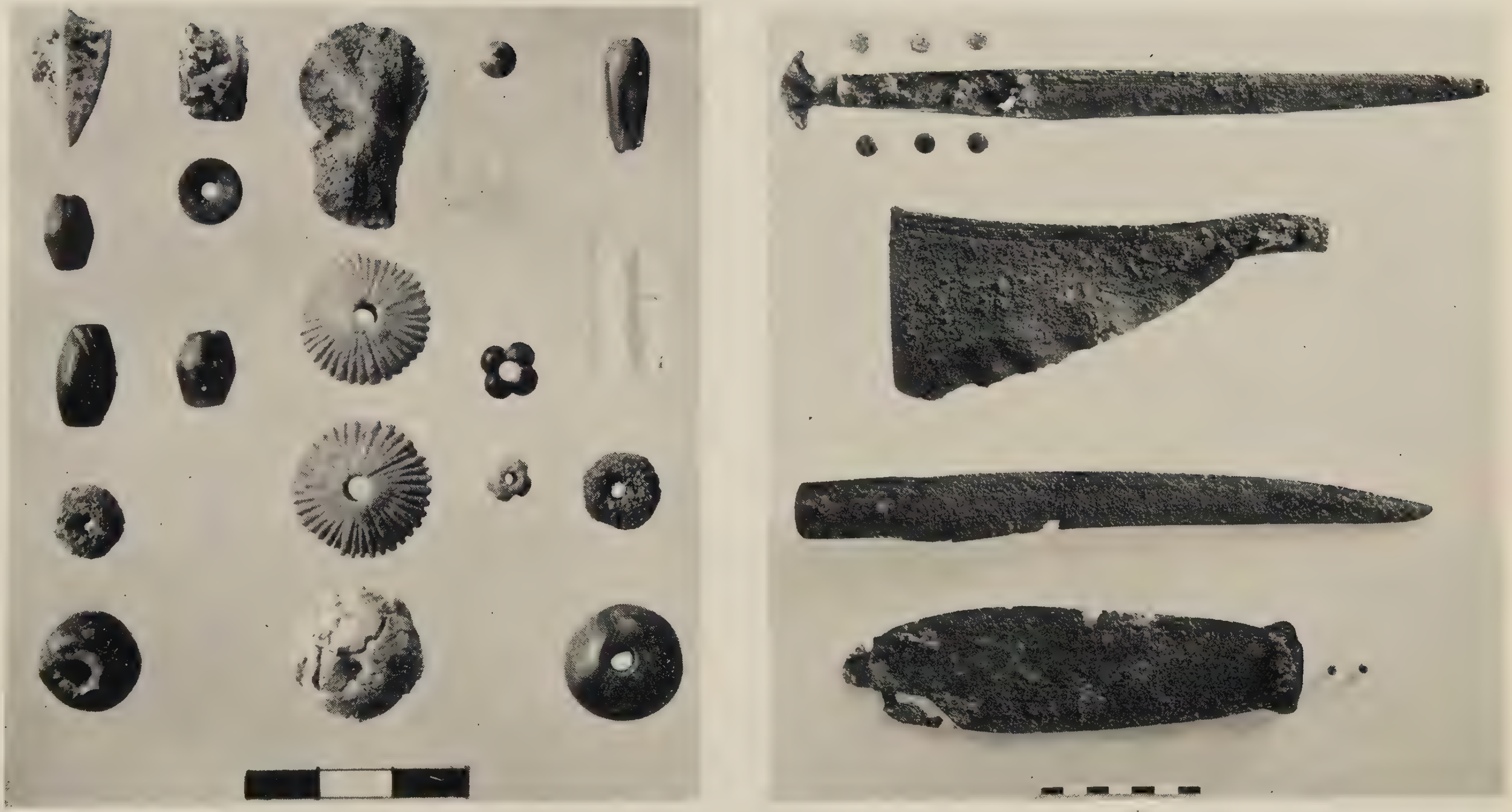
(*b*)



(*d*)

A MINOAN CEMETERY ON UPPER GYPSADES

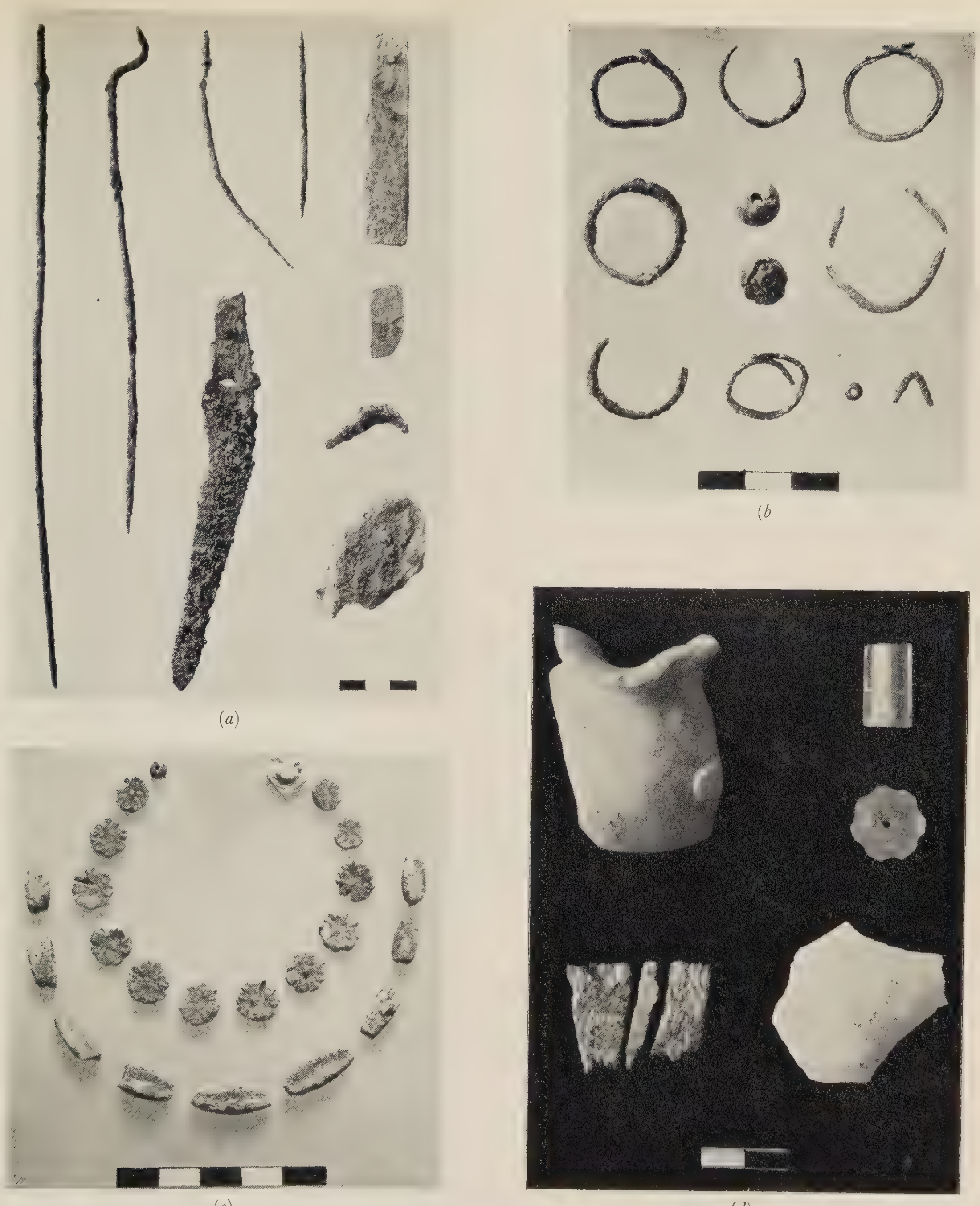
(*a*) L.M. sherds from trial trenches etc. (p. 226). (*b*) M.M. clay objects, mostly from fill of Tomb XVIII: *L. to R.: Left row (vertically)* M. **5,** M. **6,** XVIII. **33,** unnumbered fragment. *Centre row (vertically)* XVIII. **31** and **32,** XVIII. **22,** M. **2.** *Right row (vertically)* XVIII. **30,** M. **1,** XVIII. **21,** XVIII. **20.** (*c*) XVIII. **22,** sherd from jug with 'barley ears' in relief. (*d*) V. **1,** razor; X. **3, 4,** mirror and razor.



(*a*) (*b*)

A MINOAN CEMETERY ON UPPER GYPSADES

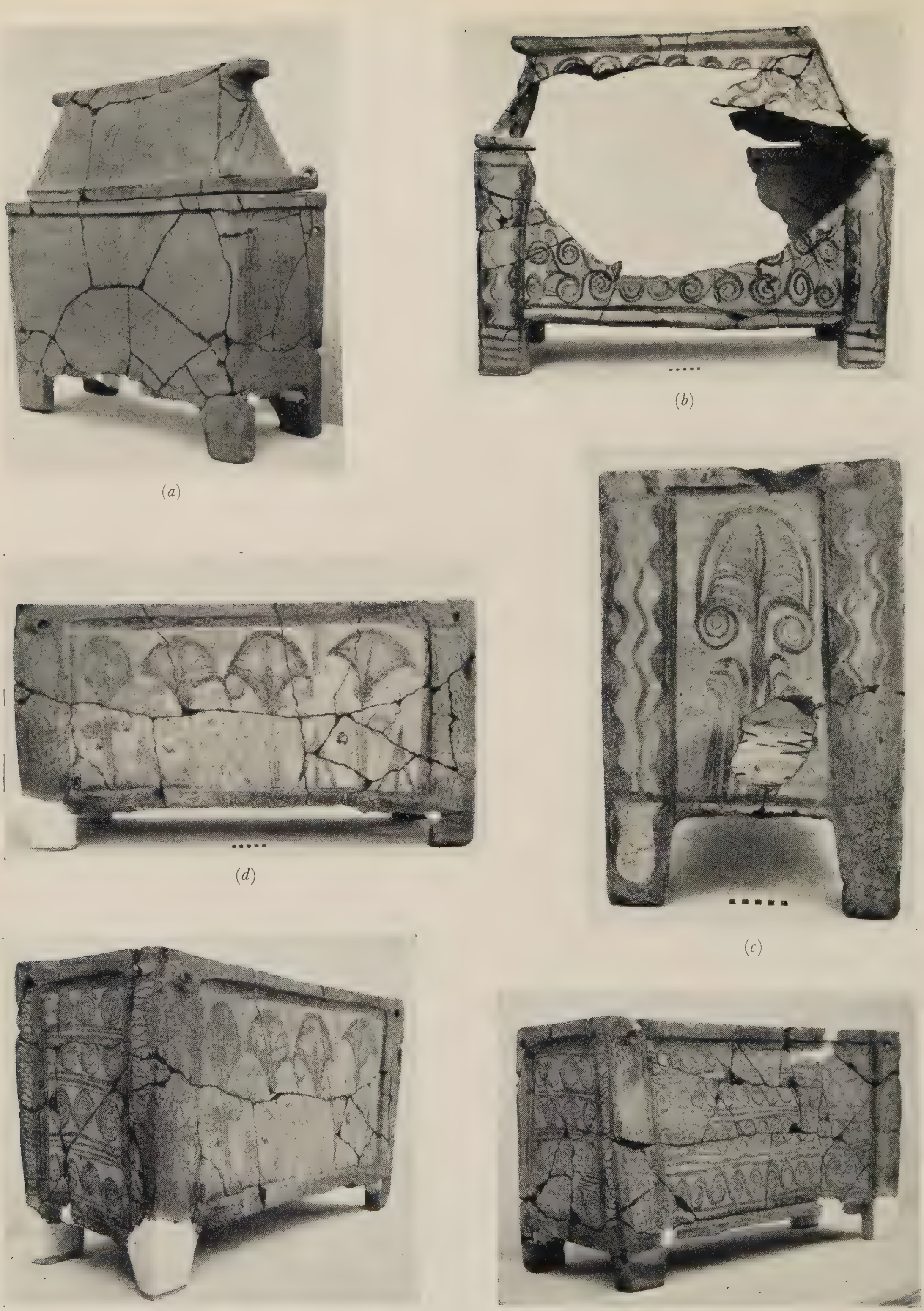
(*a*) BEADS AND AMULETS: *L. to R.: 1st row (vertically)* X. **6**, II. **9**, II. **10**, VII. **23**, VII. **22**. *2nd row (vertically)* X. **10**, X. **9**, XI. **8**. *3rd row (vertically)* XIIIA. **2**, X. **14**, II. **2**, II. **3**. *4th row (vertically)* X. **5**, X. **11**, VII. **24**, VII. **25**. *5th row (vertically)* X. **7**, IV. **5**, II. **6**, II. **8**.
(*b*) KNIVES AND RAZORS (*vertically*) I. **5**, I. **8**, I. **7**, I. **6**.



(*a*) (*b*) (*c*) (*d*)

A MINOAN CEMETERY ON UPPER GYPSADES

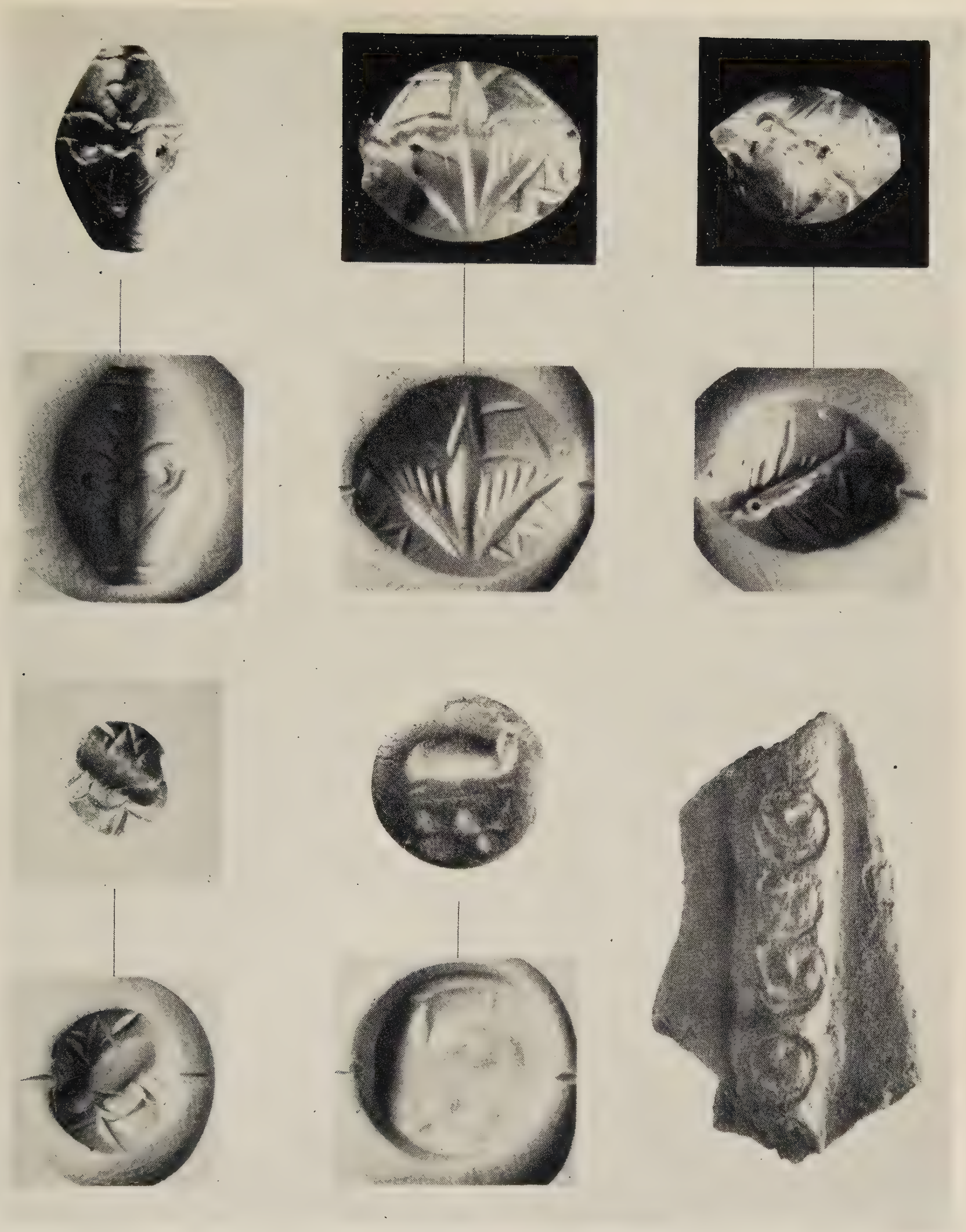
(*a*) Bronzes, mostly from Tombs VI and VII. *Top row, L. to R.:* VII. **13,** VII. **16,** VII. **14,** VII. **15,** VI. **5.** *Bottom centre:* VII. **12.** *Lower R.* (*upwards from scale*) XVIII. **23,** M. **7,** VI. **6.** (*b*) Bronze and silver rings and beads. *Top row, L. to R.:* VII. **18,** IX. **3,** XVIII. **6.** *Centre, L .to R.:* IV. **4,** VI. **4** (*above*), VI. **3** (*below*), XVIII. **6.** *Bottom row, L. to R.:* VII. **17,** III. **1,** XVIII. **8,** XVIII. **7.** (*c*) Beads X. **13.** (*d*) *Top L.*, stone jug XVIII. **24.** *Bottom L.*, ivory comb IV. **1.** *Top R.*, crystal beads IV. **5,** X. **11.** *Bottom R.*, ostrich egg XVIII. **35.**



(*a*) (*b*) (*c*) (*d*) (*e*) (*f*)

A MINOAN CEMETERY ON UPPER GYPSADES

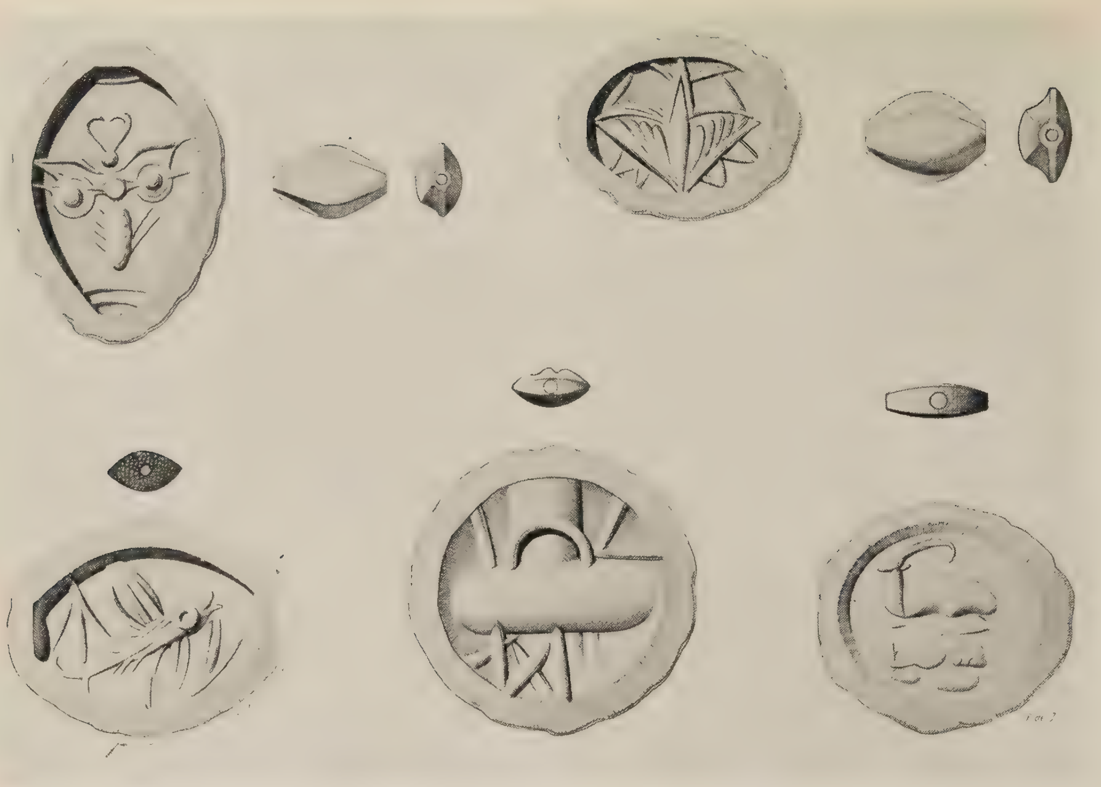
Larnakes: (*a*) Tomb VII. (*b–c*) Tomb XIII. (*d–f*) Tomb VI (larnax IV).



VII 20 XVIII 5 M 2

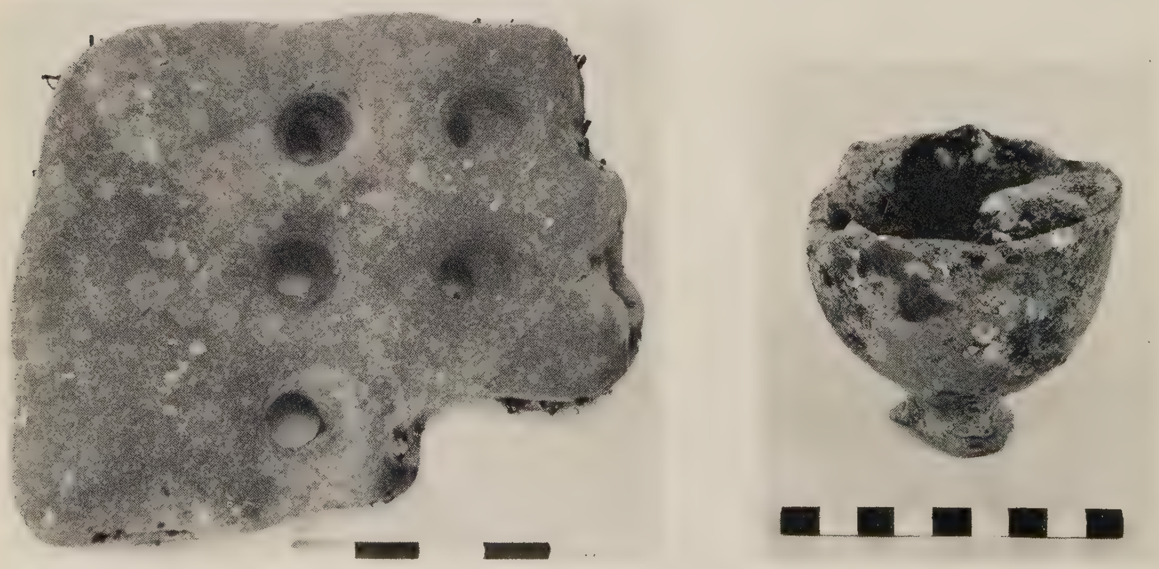
A MINOAN CEMETERY ON UPPER GYPSADES

Sealstones and impressions: *top row* (*L. to R.*) III. **4**, II. **5**, VII. **21**; *bottom row* (*L. to R.*) VII. **20**, XVIII. **5**, M. **2**.



A MINOAN CEMETERY ON UPPER GYPSADES

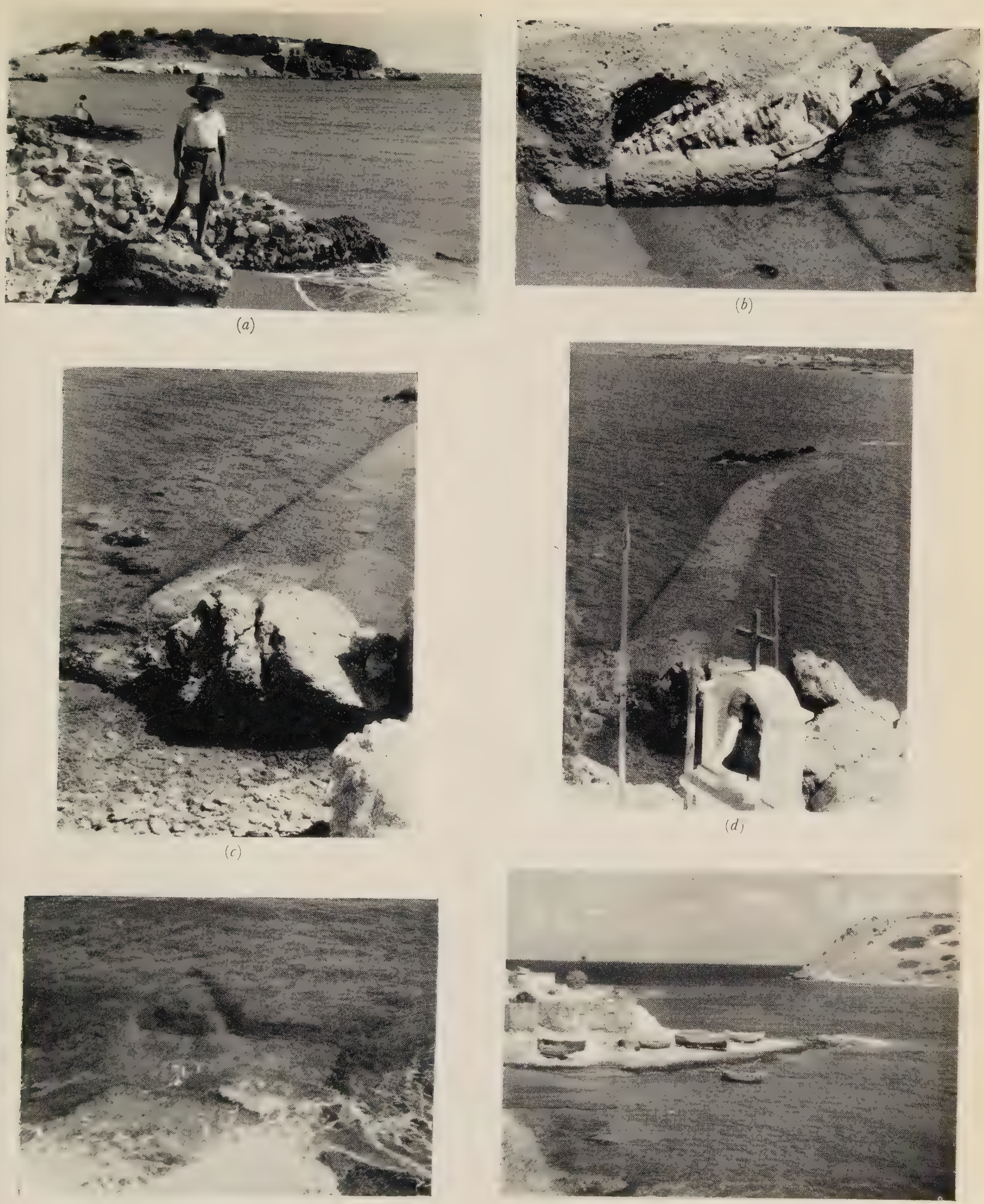
SEALSTONES AND IMPRESSIONS. *Upper row* (*L. to R*) II. **4** (2½:1, 1:1), II. **5** (1½:1, 1:1). *Lower row* (*L. to R.*) VII. **21** (3:1, 1:1), VII. **20** (3:1, 1:1), XVIII. **5** (2:1, 1:1).



(*a*) (*b*)

SUB-MARINE EXPLORATION IN CRETE, 1955

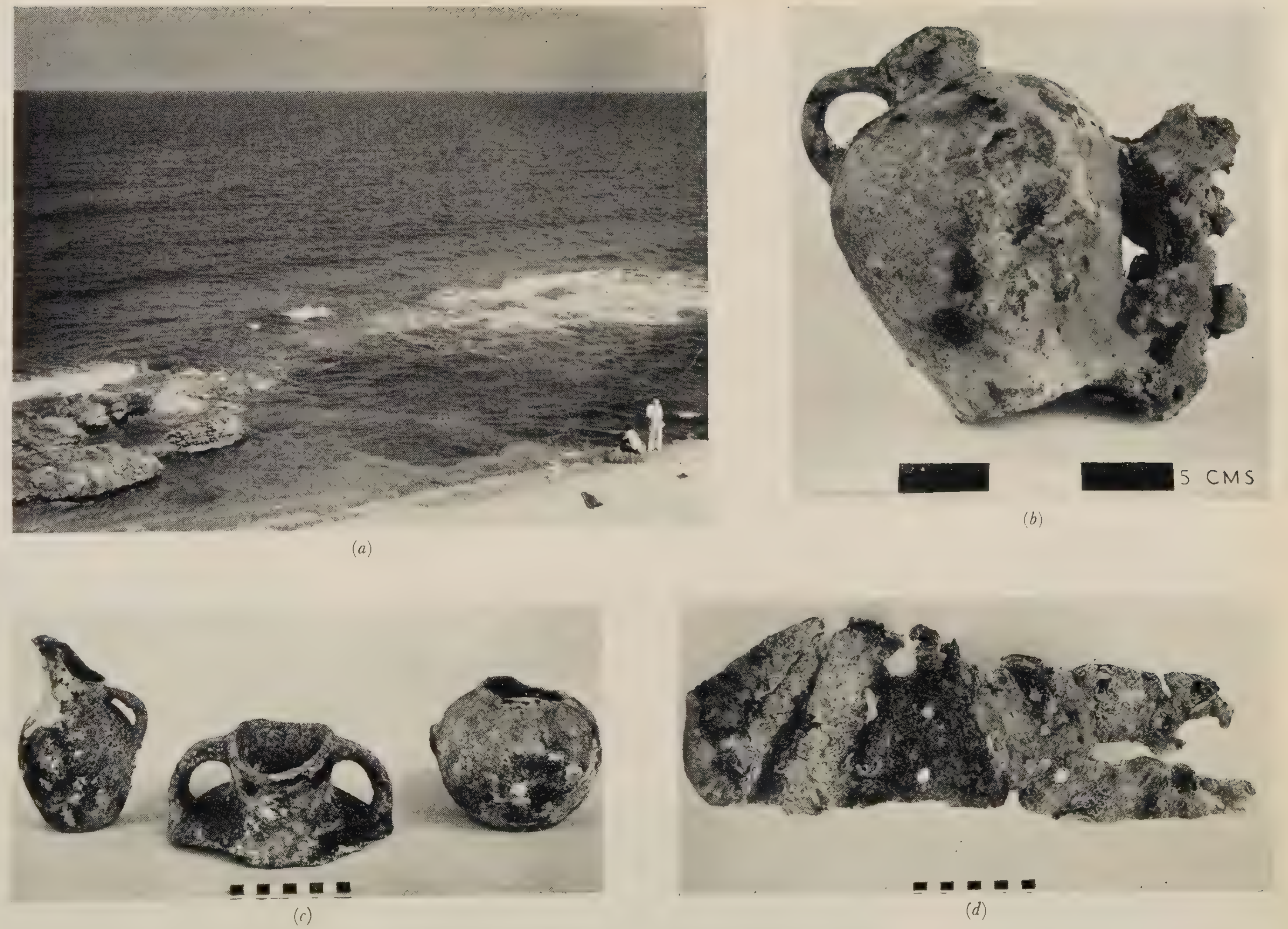
(*a*) STONE GRILL FROM FISH TANKS AT MOCHLOS. (*b*) VASE FROM MOCHLOS (5 on FIG. 10)



(a) (b) (c) (d) (e) (f)

SUB-MARINE EXPLORATION IN CRETE, 1955

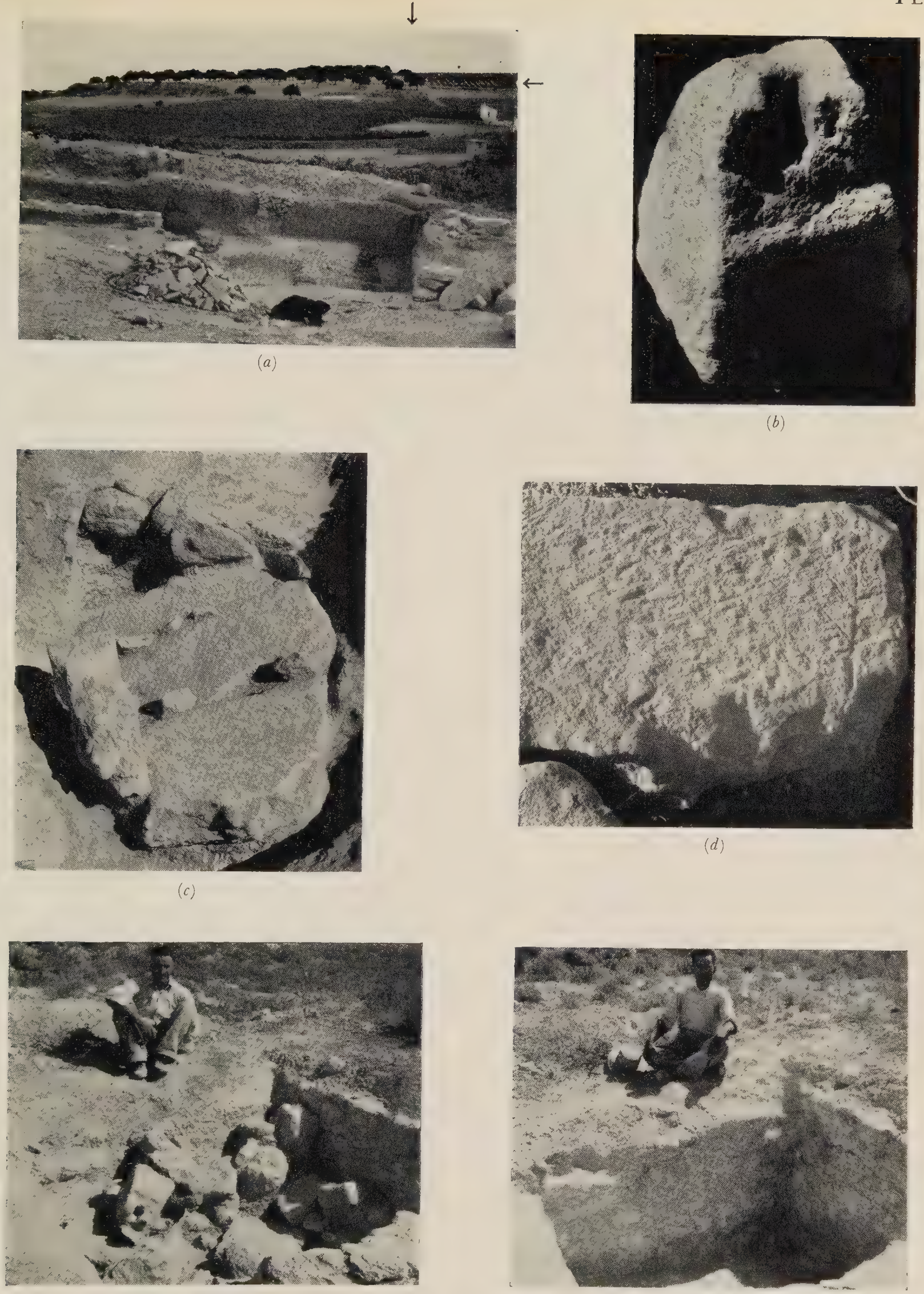
(*a*) Chersonisos: view north across harbour from 6 on plan, Fig. 2, to headland. (*b*) Chersonisos: chamfered blocks at 12 on plan, Fig. 2. (*c, d*) Chersonisos: mole (A) looking south from headland. (*e*) Mochlos: fish tanks. (*f*) Mochlos: submerged isthmus looking north from mainland.



(a) (b) (c) (d)

SUB-MARINE EXPLORATION IN CRETE, 1955

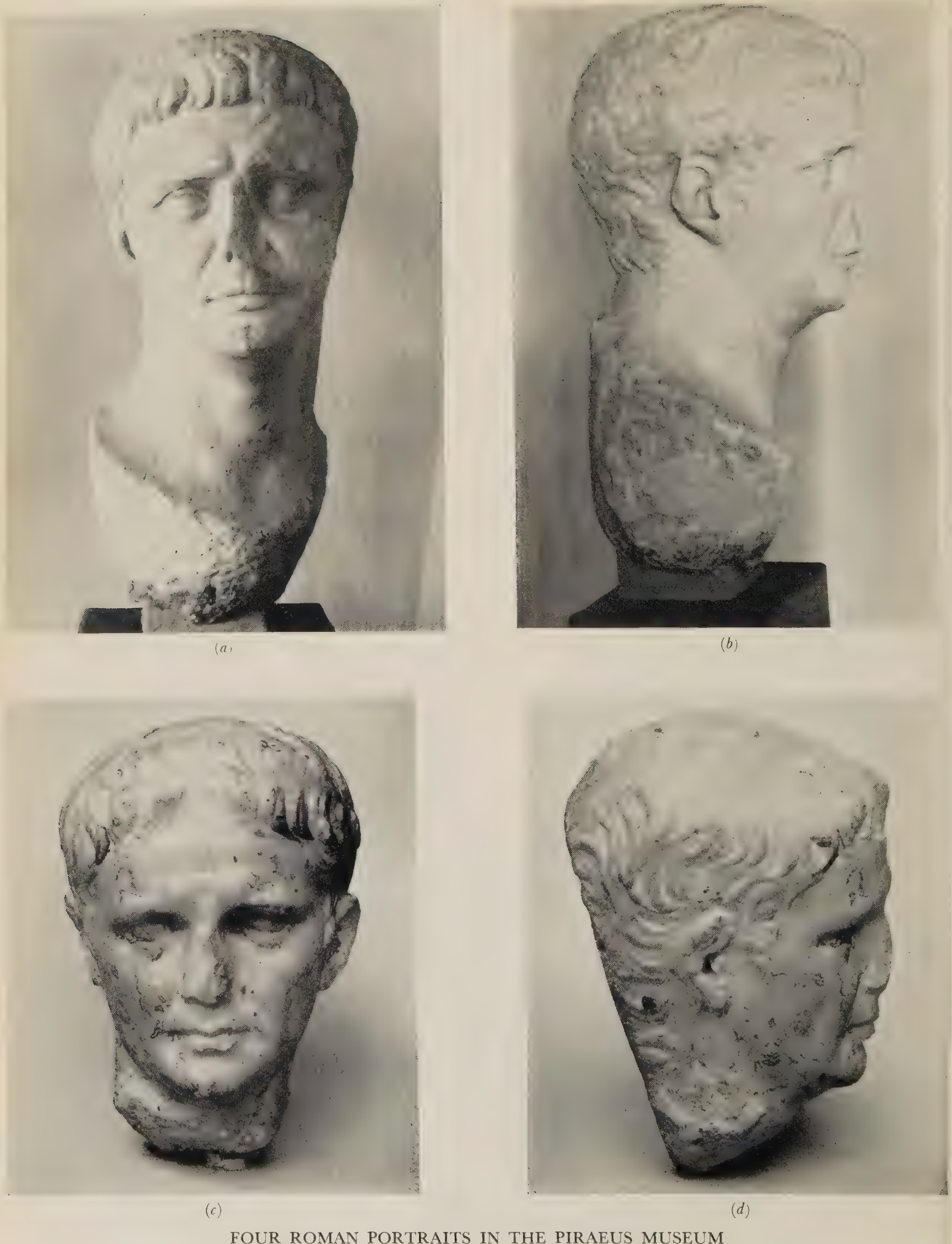
(*a*) CHERSONISOS: FISH TANKS. (*b*) VASE FROM PSEIRA. (*c*) VASES FROM PSEIRA (L. to R.: 8, 6, 10 on FIG. 10).
(*d*) LEAD PLATE FROM AYIA GALINI.



(*a*) (*b*) (*c*) (*d*) (*e*) (*f*)

MINOAN SHAFT-GRAVES

(*a*) Bank with Hogarth's Tombs and shaft-grave, from Early Christian basilica on Sanatorium site. (*b*) Double-axe stand from shaft-grave opposite Temple Tomb. (*c*) Shaft-grave by Hogarth's Tombs with covering slabs in place. (*d*) Covering slab from (*c*) with branch sign. (*e*) Shaft-grave opposite Temple Tomb with stone fill (double-axe stand to l.). (*f*) Shaft-grave opposite Temple Tomb cleared.

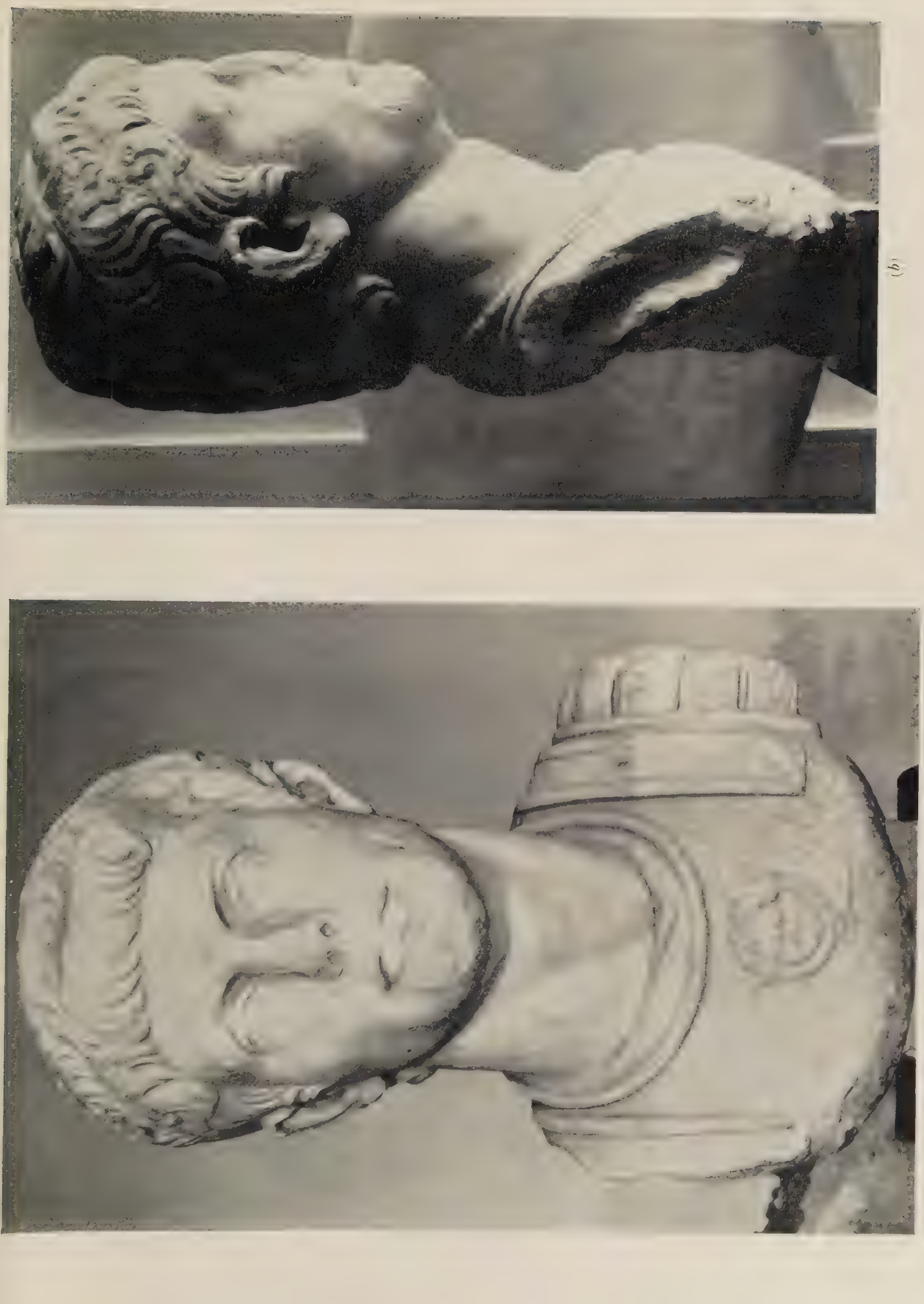


(a) (b)

(c) (d)

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

(*a*–*b*) Piraeus E 4. (*c*–*d*) B.M.

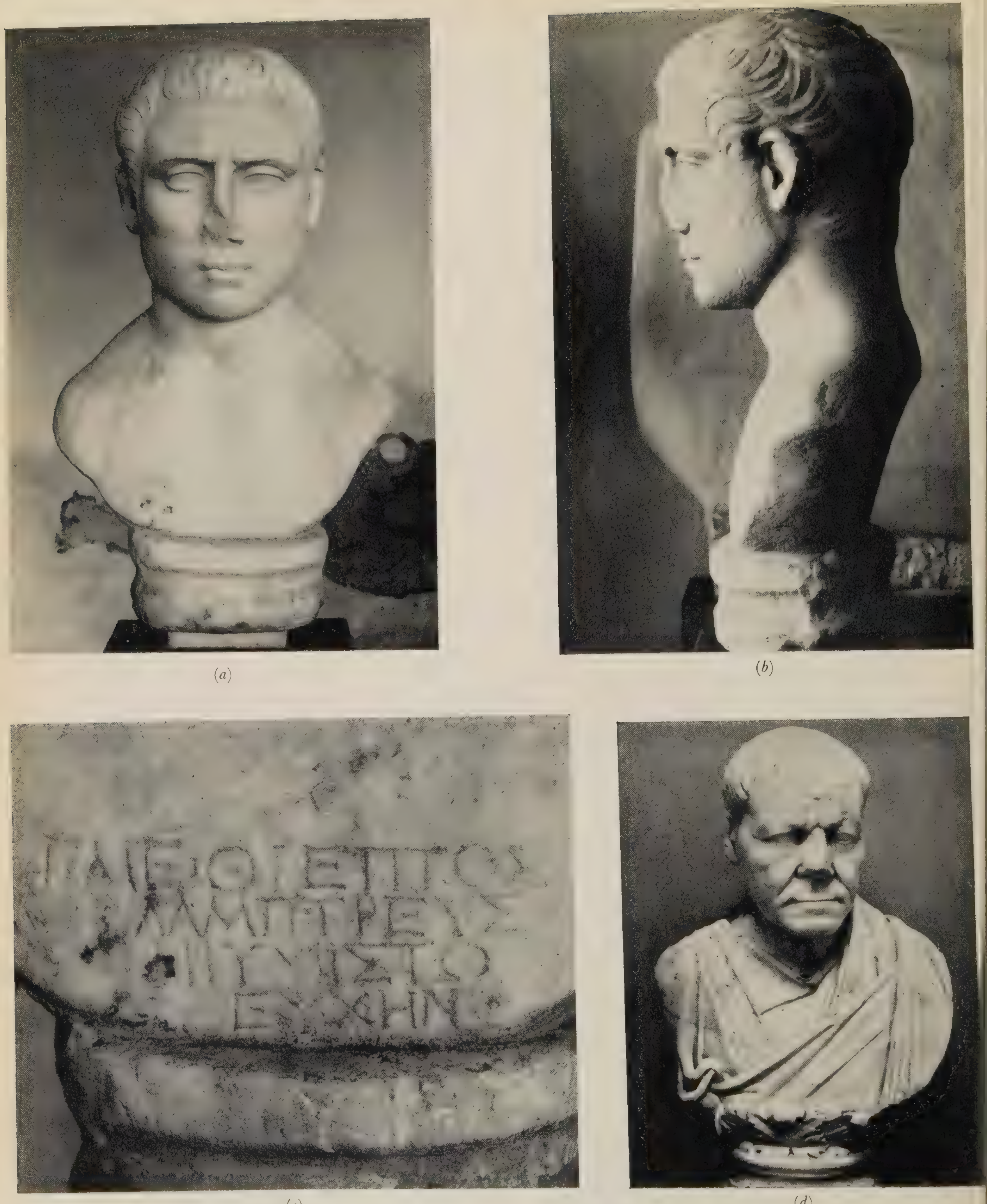


(a)

(b)

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

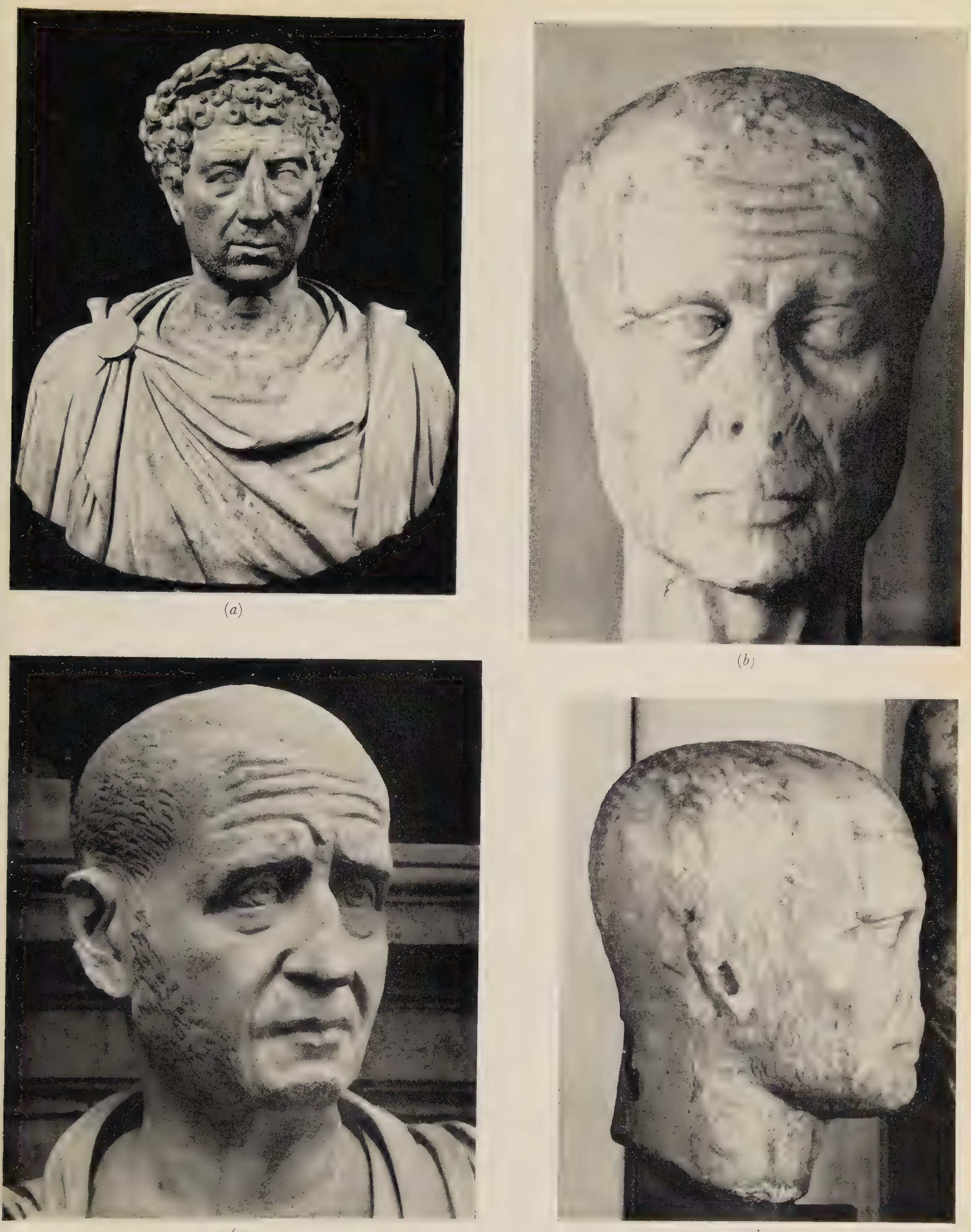
(*a–b*) PIRAEUS E 3.


(*a*) (*b*)

(*c*) (*d*)

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

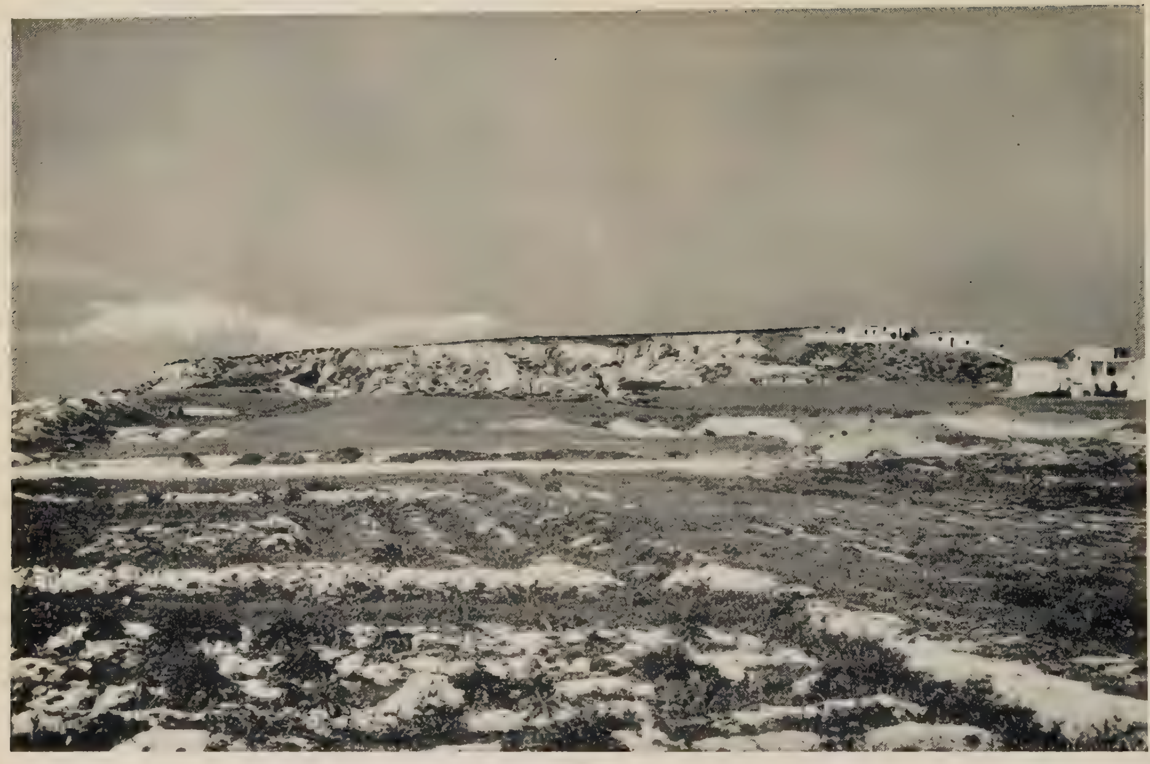
(*a–c*) PIRAEUS E 717. (*d*) OSTIA MUSEUM.



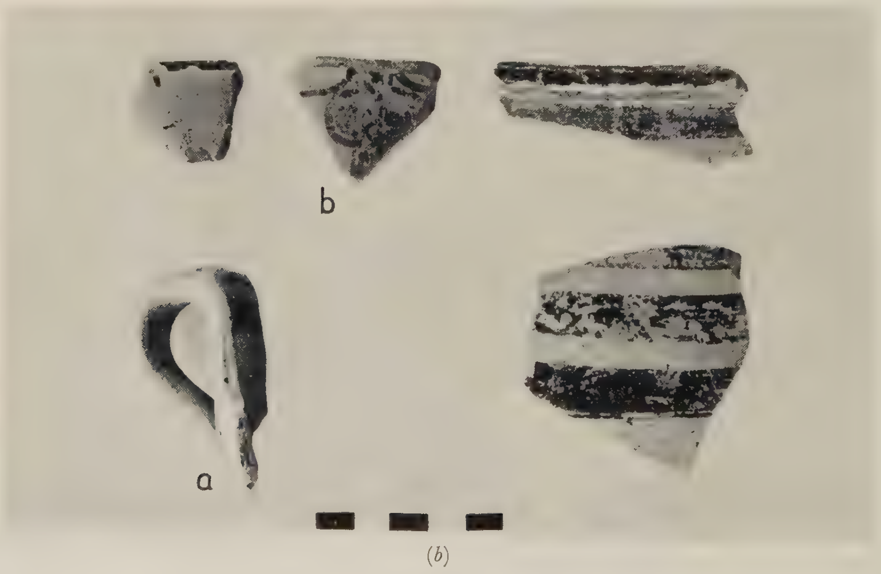
(a) (b) (c) (d)

FOUR ROMAN PORTRAITS IN THE PIRAEUS MUSEUM

(*a*) CAPITOLINE MUSEUM. (*b*, *d*) PIRAEUS S 7. (*c*) CAPITOLINE MUSEUM.



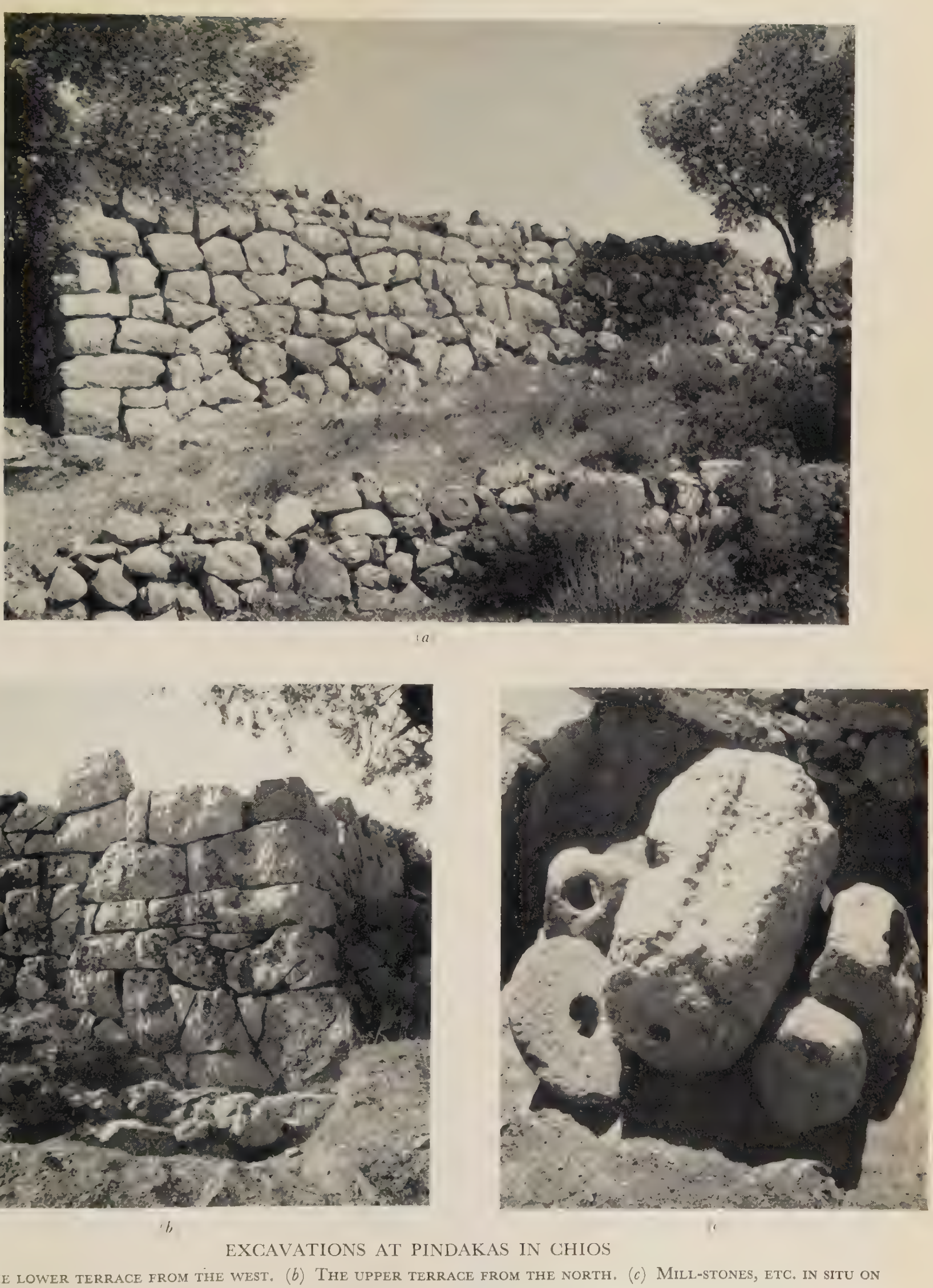
(*a*)



(*b*)

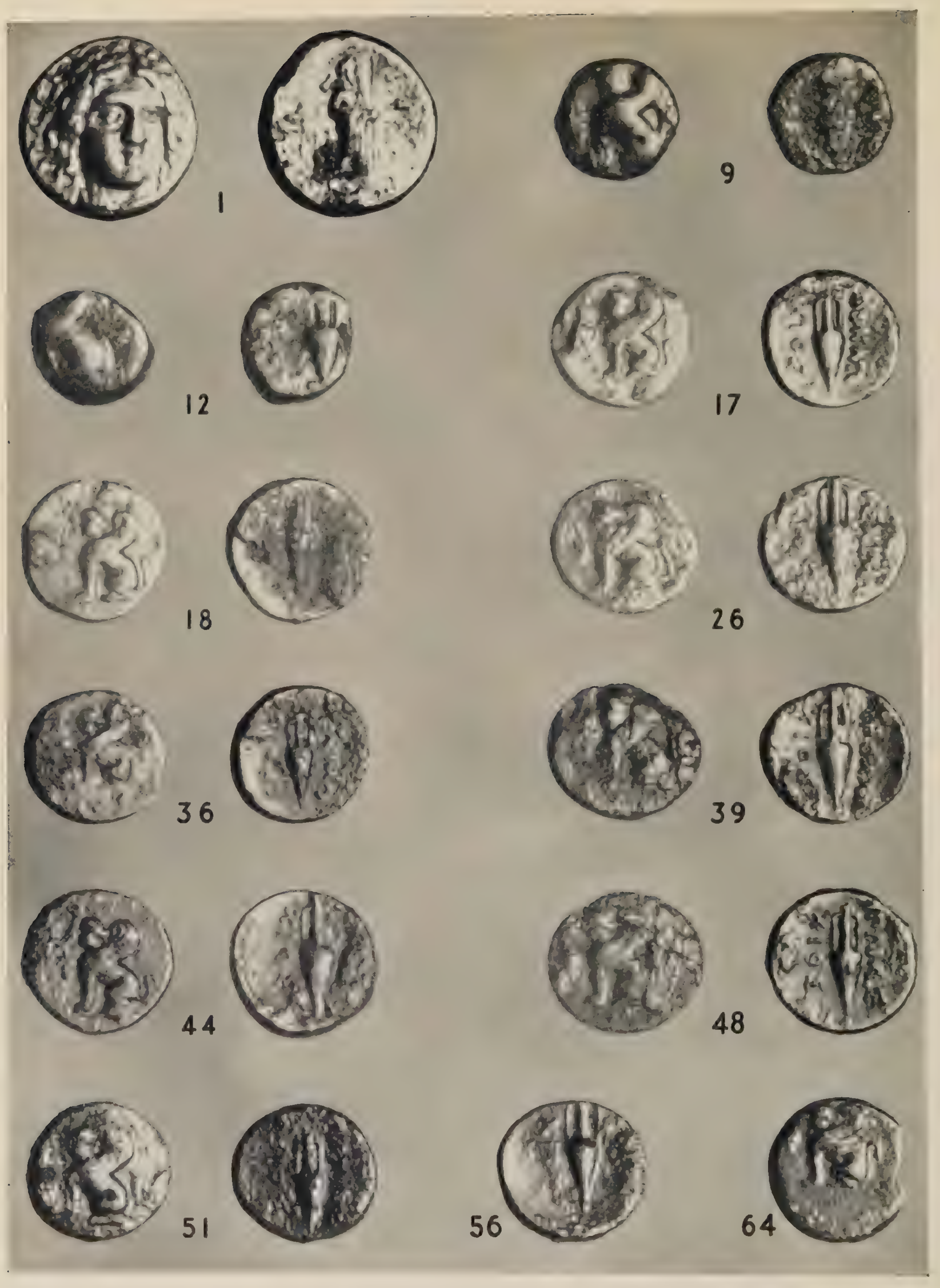
NEMESIS: A MYCENAEAN SETTLEMENT

(*a*) Nemesis: the hill from the south-west. (*b*) Mycenaean pottery from Nemesis (scale in cm.).



EXCAVATIONS AT PINDAKAS IN CHIOS

(*a*) THE LOWER TERRACE FROM THE WEST. (*b*) THE UPPER TERRACE FROM THE NORTH. (*c*) MILL-STONES, ETC. IN SITU ON THE LOWER TERRACE.


1
9
12
17
18
26
36
39
44
48
51
56
64

EXCAVATIONS AT PINDAKAS IN CHIOS

Selection of the coin hoard (scale 2 : 1).

BIBL.
LONDIN.
U